UPDATE MAGAZINE

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Serving Sinclair Users Worldwide for the 9th Year

UPDATE MAGAZINE, P.O. BOX 17, MEXICO, IN 46958 USA

UPDATE COMPUTER SYSTEMS is edited by Frank Davis and published by Carol Davis of **P.O. Box 17, Mexico, IN 46958 USA.** The phone number is **317-473-8031** for voice. **Normal hours are from 6 to 9 P.M. Tuesday thru Saturday.** Please use the answering machine if we are not available, and leave a short, concise message with both phone number and address. Most answers to questions left on the machine will be by mail, as long distance charges are too costly for a small magazine to be expected to bear. **The phone number for faxing is 317-472-0783, and the hours for faxing are 7 P.M. thru 11 A.M. every day of the week.**

Mailing date of the magazine: all issues will try to be mailed out near the 20th of the months of October, January, April and July. All mailings within the USA are by bulk mail and may take a few weeks to reach you at the most. Those wishing to have faster service may pay $4 extra for First Class Mail. The present rate for North America is $20 in US$; and 18 pounds or 40 DM in European currency for a subscription. All issue years run from October to July of the next year, and those who subscribe during a year will get all issues for that year. In this way all subscriptions begin and end at the same time. Timely renewals are what keep us in business!

Assistance in publishing this magazine is provided by you the readers, many of whom have contributed news, articles and reviews. We offer you our heartfelt thanks. We are mainly assisted by our longtime friend, Eliad Wannum, Poet, Psychologist and Sinclair computer user. In addition, regular contributors have been: Bill Cable, Paul Holmgren, David Lassov, Al Feng, Don Lambert, Bob Swoger, Abed Kahale and Peter Hale, to name just a few. We invite you to submit material for publication to UPDATE MAGAZINE. Please make all hard copy (printed out) submissions Letter or NLQ; no draft print, or 2040 thermal print. The quality is too poor to print in a readable manner, and we do not have the time to re-type most articles. If you do not have a printer capable of this , then send the article on disk to us as: Z88, IBM, QL, TS2068 in Oliger or Larken, or in an Amiga file. We can handle these disk formats. We can use 5.25 or 3.5 disks in DSDD, HD, or ED densities. Send two copies of hard copy. Do not submit stuff on audio tape, as we no longer have any tape decks for the TS1000, or the TS2068. Try to avoid flowery or hard to read fonts, unless you are showing us sample output from a printer reviewed or a program. If artwork for an article is to be included, please let us know in what order you think it should be displayed.

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We hope to be of service to you. We do this magazine as a labor of love, not as a profit making business. Thank you for your support. All articles in UPDATE remain the intellectual property of their various authors.

Carol Davis

Frank Davis

Eliad Wannum

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The front cover for this edition was done courtesy of Frank Davis of UPDATE. Cover graphics are wanted for future issues. This is a quarterly, user supported magazine. The inside page covers subscriptions, ad and article submission to UPDATE. It also covers delivery methods and times.
We are now in our 9th year of publishing, and look forward to you as a subscriber. Send us articles and news! Perhaps you will even sign up a friend to make us even stronger. If you sign up two paid, new subscribers to UPDATE you will get your subscription at half price!

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NEWS AND VIEWS ON SINCLAIRS

by Frank W. Davis

Lots of items to cover this issue. By the time you get this I know it will be a bit later than I wish it were. My main job with the federal government has taken a lot of time away from me the last couple of months, what with training others and longer hours (I have even found myself going in to check on things on Saturdays, not at all to my liking). Most of this is now starting to settle down and I am getting back on a regular schedule.

Paul Holmgren (QUANTA Librarian, frequent contributor to UPDATE, etc.) lost his house in a fire shortly after Christmas. Luckily no one was inside of the house at the time of the fire. From what I heard from him, the only known working computer he had survive the fire was his Z88 from Cambridge. Not his IBM compatible, and seemingly not his QL. He is soon to be in the process of rebuilding the house at the same spot. Mail sent to his old address should still reach him, but he is living in an apartment till his house is rebuilt.

The ads in this issue from Mechanical Affinity are the last you will see. Effective now the name of the company has been changed to FWD COMPUTING. You may ask, why change what has been a long and successful name in the Sinclair community? Paul Holmgren and myself (Frank Davis) had been running Mechanical Affinity pretty much as a hobby activity, mostly to keep ourselves up on the Sinclair world and as a favor to all of you. This took a lot of hours out of our personal lives, and away from family (Paul still has children at home, not to mention we both work regular jobs). He also wanted to get back into fixing up his old race car (yes, Paul was once a race car driver, mostly NASCAR I think). So, my wife Carol and I took over what was left of Mechanical Affinity and combined it with my Amiga computer business. That is now FWD Computing. Paul, when he gets set back up from his house fire will go back to being the QUANTA librarian, a QL user and still show up at computer shows once in awhile.

Speaking about computer shows, FWD Computing will be at the one day show in Indianapolis at the State Fair Grounds on March 10, 1996. Paul will be there for that. Any who can make it are welcome to drop by our booths. This is a one day show.

I am once again going to give the Dayton Computerfest a chance. This year they are having two shows. One is the last weekend of August, and the other is the 16th and 17th of March, 1996. Paul has told me he will also be there at this show. I know I will be there and this time I already have the booths. Need something for your QL, Z88, Amiga, etc? See me at the show. Perhaps we can all get together and go out for dinner or breakfast. There is a small ad concerning this show elsewhere in this issue of UPDATE. Carol and I hope to see as many of you there as is possible. How well we do at this show will determine whether we are at the show in August. I just know that Gary Ganger and Tim Swenson will be there with their classic computer museum setup (a lot of it is Sinclair), and I got an email from Don Walterman, who told me that he and John Impellizzeri (both of QBOX USA fame) will probably be there.

For those who get on the Internet, check out the homepage of Di-Ren, (Robin Barker) one of our foremost QL hardware developers and software writers. His address on the Internet is 'http://www.forthrt.com/~di-ren/amadeus.html'. This has links (places you can go to and hit ENTER (or your right arrow key) and be electronically transported to someone elses site on the Internet.)

Another one of our own who has put up a site on the Internet is Tim Swenson, editor of the QL HACKERS JOURNAL. He has also started up a service for those looking for the latest freeware, shareware, and public domain software for the QL and Z88. On his

web page you will find lists that have the email addresses of ZX81 users, TS2068 users, QL users, Z88 users, Sinclair users on the Fidonet, Mausenet users, and people who receive the QL HACKERS JOURNAL. You will be surprised at how many people who use Sinclair computers are also on the Internet (more on this in the next paragraph). His address on the World Wide Web is 'http://www.serve.com/swensont/'.

Some of you are probably wondering just why we have taken such an interest in the Internet in the last few issues. That is a fair question. As I mentioned above there are many Sinclair users involved in using a modem. In fact I have been finding out many more than I found on Tim's lists. I need to get together with him as I could easily double the size of some of his lists. I was one of the first non-business people back in 1981 to get on Compuserve, way back when I was doing so with my TS1000 and VIC-20 computers. But when you live in a small town that to access BBSes and large information providers such as Compuserve require you to pay long distance phone charges as well as the hourly rates of these companies, I laid my modems aside in 1987. I did not use one again until I found myself laid up for several months from surgery in early 1995. I had heard about the Internet (who has not by now), and found a company was providing local phone call access in my small town. For $20 a month I got 220 hours of use a month, several different ways to get on the Internet and my own home page. That was the type of incentive I needed to get back to telecommunicating. The learning curve was a little frustrating but well worth the effort. I have far more access to information of all sorts than would be available if all the libraries of my state were placed in my living room. I find it has been of great help to me in doing business as a magazine editor and as a mail order computer dealer. It is certainly faster to get mail to other people. If I need to know a recipe or the uses of an herb, or get an answer to a medical question, the information is not too far away. And you will find that there are far more pictures and graphics on the Internet of beauty than of pornography. There is some junk, but far more good. It is just like the various qualities of life we find everywhere else.

Here is a tip for those who use Magnavox monitors with their computers, from John Pegram. "I received the Magnavox monitor safely and it worked until it got warmed up then the display quit. When things cooled off, it would work again, etc. Fortunately this was the same problem with my older monitor when it was on its last legs.....Well I discovered that the heaters for the CRTs went out when things quit. That meant the horizontal sweep quit. I carefully disassembled the monitors and unsoldered the metal shield covering the underside of the main circuit board. Upon careful inspection with a magnifying glass I found that there were several solder joints from the flyback transformer to the main circuit board that had a faint black circular line around the filleted solder joint to the fairly heavy #14 or #16 wire terminal to the flyback transformer. I resoldered these joints and now everything is fine on both monitors. I thought you might be interested in passing this on." Thanks, John!

If you have noticed that your keyboard is not acting right on your old ZX81 or TS1000, send me $6 and I will send you a brand new replacement membrane to replace the old one. These are the only ones left that I know of, so get them while you can.

For users of the TS2068, we at UPDATE are offering the professional version of LOGICALL V6 for the Larken disk system. It comes in three versions: regular Larken, Larken system used with the Oliger disk interface, and for use with the Aerco-Larken combination. All of this for $15, courtesy of Bob Swoger and available from both UPDATE and RMG. The new operating system for Larken gives it much of the ease of use of theOliger system, while preserving all the added facilities of the Larken. With Logicall you may have the best that has ever been for the Z80 based computers and disk drives.

Check Your Surge-Protected Circuits

Robert D. Hartung, 2416 N. County Line Rd. E., Huntertown, IN 46748

Twice in the past three years I have experienced failure in the electronics of the printer used with my TS2068 system. The second time, the Oliger printer port card failed as well, so I wrote to John for advice. The part of his letter that follows may be of interest to others as it was to me.

"I would suggest replacing the 74LS374 data output buffer chip on the printer port. I would guess your problem is being caused by a grounding problem. I have heard from at least one other who was having this kind of problem, and it was traced eventually to a power strip that used varistors as a filter within the strip for surge protection. The varistors many times are wired both across the power lines and to the grounding "U" ground of each outlet. Because the 2068 uses a DC power pack it is itself not grounded, but can become grounded by connections to printers and disk drives that do have U-grounded cords. If one of the power strips is not grounded as well as another one of the strip outlets is, or if, say, a monitor is plugged into a different power source than a disk drive power supply is, then this 'noise' removed from the incoming power lines can be shunted from, say, the printer to the drive enclosure through the 2068! Bottom line: If you have more than one device with U-ground plugs connected to your computer, be sure they are plugged into the same outlet or use a power strip on all such devices that does not attempt to filter the power line."

Following John's suggestion I found that the probable cause for the port and printer being zapped was via a mechanical Centronics switch between the C. Itoh printer on the same electrical outlet used by my TS2068 and the Epson printer on a different surge protected outlet. I did find that replacing the 74LS374 on the TS2068 printer port card restored it to operation, but the printer which I was using at the time it failed still gave out garbage, printing only random characters. This indicated that the printer buffer chip had gone out also, as it did about three years ago when I had to enlist the services of Dan Elliott to get the printer going again.

I experimented with a digital voltmeter and an extension cord between the outlet I use for my TS2068 system and a surge protected outlet that is supplied by the other side of the main service. I got a reading of not 110 volts, nor the 220 I expected, but 440! This excess voltage appears to be a sort of surface potential, but certainly is enough to zap an IC -- and possibly you! The circuit capacitance, combined with a varistor used as a surge protector, apparently acts as a voltage-doubler. While this is not the same as the surge or 'line noise' John refers to, it is well to keep in mind that this voltage potential exists between devices which happen to be connected to opposite sides of electrical main circuits.

I now have isolated my entire TS2068 system from any surge protected circuits not on the same outlet with it. It appears very possible that the failure of the data buffer chips on some of my disk drives might have been linked to this source also.

Why these problems occurred only at such widely-separated intervals remains a mystery to me. I'll leave it to you to decide whether or not your system may be prone to similar 'accidents just waiting to happen.'

Systems-Oriented Languages, CORP
2590 N. Jordan Dr.
Tucson, AZ 85745-1132
520-884-7667 (voice)
520-882-0388 (data)

Friday 12-29-95 09:10:14.83

Frank Davis
Editor, UPDATE Magazine
P.O. Box 17
Mexico, IN 46958

Dear Frank :

This is to announce the opening of Systems-Oriented Languages Bulletin Board System. SOL BBS is unique, in its use of the Timex-Sinclair model 2068 as a platform for data communications. When have you EVER seen a complete BBS, run on a 2068 ?? Well, here it is, and it's only a telephone call away !!

As you might expect, the need for prompt response within the constraints of 37000 bytes of FREE memory has led to a few compromises. But, you should be rather comfortable with the system. SOL BBS features a 64 character-per-line messaging system along with time-tagging, if the sysop be absent. Otherwise, Maxcom has a fully functional TALK MODE for on-line conversations between sysop and callers.

The original software, from Ottawa-Hull Timex /Sinclair BBS, has been broken out into three versions of Larry Kenny's Maxcom.

First, TERMax serves as strictly terminal software, which performs some housekeeping duties. Using an outstanding AUTODIALER to call somebody in TERMINAL MODE, the user can SEND and RECEIVE FILES or just type in TALK mode. The individual message bases can all be SQUEEZEd, using TERMax. Communication PARAMETERS are all selectable here; the CLOCK can be set or reset here; and the CAPTURE BUFFER is opened or closed here along with sending text files. Arbitrary text files are VIEWed at the message menu.

For remote operation of the BBS, the NONrelocatable code for setting the clock conflicts with TALK mode. So, the version of MaxCOM for unattended use tags all calls with timeON, ELAPSED times, and MESSAGE ENTRY TIMEs.

For attended use, MaxCOM implements a full-featured TALK MODE.

So, please give us a call and see what the 2068 has for the 90's. Oh yes, and PLEASE LEAVE THE SYSOP A MESSAGE.

KEEP ON TIMEX'N
THANKS AGAIN,
DAVID E. LASSOV

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FT 17 JUN 95 / Lunch with the FT: A taste for technology - Sir Clive Sinclair saves most of his appetite for his inventions

By LUCY KELLAWAY

No sooner had he received the invitation, than Sir Clive Sinclair was on the phone. He was free for lunch most days, he said, but he could not pick a restaurant as he did not know any.

This might be a problem, I replied, as one of the rules of Lunch with the FT was that the guest had to choose the venue. After a little thought, he mentioned the St George's Hotel, which was round the corner from his office. On the day, I turned up at an unpromising looking Forte hotel just north of Oxford Circus. Inside, the restaurant had been refurbished; chairs were covered in yellow and orange suede, and French waiters wore beige tunics of sackcloth.

In one of these chairs Sir Clive was sitting, looking more serious than in the familiar press photos, in which he is invariably pictured alongside one of his inventions: a pocket calculator one year, a personal computer the next, then an electric tricycle, and most recently the Zero Emission Transport Accessory, a battery that you strap on to the back of your bike. To get the conversation started, I asked how sales of the Zeta were going. 'Pretty well, thanks,' he said, as if replying to a routine inquiry about his health.

As he did not expand on the subject, I studied the menu, remarking on the more fancy names such as 'Gateau of Red Mullet and Dandelion'. He kept saying 'Ah!' and 'Yes!' and 'That's right!' in a staccato sort of way, conveying at the same time that he was trying to be agreeable and that he did not know what I was talking about.

I chose the red mullet to start with, followed by a fancy preparation of monkfish. He said he would have the same, with water to drink.

Ten years ago Sir Clive Sinclair was one of the best known inventors in the world. Now he is selling his Zetas by mail order to middle-aged cyclists who cannot quite make it uphill. A few years ago he was due to marry a model less than half his age. Now he is on his own and contemplating moving both home and business from London's West End to an industrial building at the back of the city's King's Cross station.

If I were Sir Clive I would be bitter and sulky. But the man facing me across the table was dapper and sprightly. 'I never think of the past because I am always thinking of what I am going to do next,' he said. He told me about an ultra lightweight pedal bike he is working on that will fold up like an umbrella. He said this was pretty radical, as reducing the weight meant redesigning all the bike's constituent parts. 'I'm also interested in flight. I'd love to design a personal flying machine.'

As he talked, I struggled with a thick yellow jelly on top of my red mullet gateau, and noticed that he had pushed his plate to one side untouched. 'Was everything OK for you, sir?' a waiter inquired. 'You didn't enjoy it?' Sir Clive looked embarrassed. 'I've had enough, thank you. Thanks very much.' Trying not to sound sceptical, I asked if he really thought these projects would succeed. 'I've got files and files and files on all these things, just like a journalist building up a story. I never think I'll never do it. I rate the chances of them happening highly. Yes. Very highly indeed.'

He then started to tell me about his interest in artificial intelligence.

One day, he says, doctors and teachers will be replaced by machines; we will become so used to conversing with them that we will regard them as people. The monkfish arrived: another concoction of much handled ingredients. As he toyed with his, I asked (though I already had a good idea of the answer) whether he was a foodie. 'No. Absolutely the opposite.' Did he ever cook? 'The last time I made anything, I did tinned macaroni on toast. It was very good.'

In anyone else this would have been a tiresome pose. But Sir Clive does not need to pretend to be ordinary; never mind the bizarre enthusiasms, at heart he is a thoroughly normal bloke. When the conversation flagged he made polite small talk, asking about my job, and where I live. We talked about how much he liked travelling by bus. I said I drove a Ford Escort, and he said it was a fine car.

Not just polite, he is also pathologically positive. During the course of the meal he said he never envied other people their inventions, that he loved London, that he thought the Tube was a very efficient way of getting around, that the UK was a marvellous place to be for an inventor. When I told him that at his new home he would have prostitutes on one side and one of London's largest rave clubs on the other, he shrugged, and said he liked the area because 'King's Cross is the best communications point in London'.

Another waiter appeared, looking concerned. 'Is there anything wrong with the monkfish, sir?' 'No, no. It's fine thanks. I'm not very hungry,' said Sir Clive, looking alarmed as an attempt was made to clear away his bread roll. 'I'll keep that, if I may.'

Floundering slightly, and apropos of nothing, I asked him if he had seen that week's bargain offer in the FT of a digital organiser. To my surprise, he said he had cut the coupon.

'I've never used one of those things, but it looks rather nice. I need something to replace this,' he said, showing me a slim address book with pages crammed full of addresses in tiny, perfect handwriting.

Despite having introduced the British public to pocket calculators and home computers, and being credited with teaching a whole generation to write its own software, Sir Clive is no digital fanatic. He claims never to have played a computer game in his life.

Instead, he says, he entertains himself by working on his new products, meeting his friends from Mensa (the society for people with high intelligence test scores, of which he is chairman) and playing poker.

I asked whether he was ever tempted to sell out and work for a large company. He reassured me that he was not short of cash - money does not seem to interest him particularly - and that no, he would not dream of giving up. 'I am always turning down consultancy work for other people. It is not what I want to do. I am an inventor. It is difficult to be a good one. People do not realise what you need to do. It is not a question of coming up with an idea. Ideas are 10 a penny. It's about making something happen.'

For the first time during the lunch he became almost loquacious and started telling me about the men who invented wheelbarrows and light bulbs. Suddenly he asked: 'Why was the car invented at the end of last century when the technology had existed for 100 years before that?'

I said I had no idea why.

'I don't know!' he exclaimed, triumphant. 'It's been puzzling me lately. I used to think that new products emerged when technology permitted them. But it's not so. Not at all.' The car, the aeroplane, the X-ray were all invented within 10 years of each other, which Sir Clive puts down to a fin de siecle effect.

So what will it be this century? The folding bike?

He did not take this as a joke but started talking seriously about how the time had come for the electric car.

The bill came, I paid and he thanked me nicely. Infected by his enthusiasm, I said I would take the Tube back to the office. He walked me part of the way there, shook my hand, fixed me with his alarmingly clear eyes and disappeared up a side street for an afternoon of thinking about flight and folding bicycles.

--
| Chris Owen | New Mansion House, Lancaster Gate, London W2 |
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T/SNUG

Here is the list of T/SNUG Chairmen and how to contact them. We wish to support the following SIGs:- ZX-80/81, TS-1000, SPECTRUM, TS-2068, TC-2068, Z88 and QL. If you have any questions about any of these fine machines, contact the:

Chairman
Chief Motivator
Donald S. Lambert (ISTUG)

Vice-Chairmen

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D. G. Smith
R 415 Stone St.
Johnstown, PA 15906
814 535-6998

Z88 Library
Dave Bennett (HATSUG)
329 Walton St. Rear
Lemoyne, PA 17045
717 774-7531

ZX-81 PD Tape Library
Ed Snow
2136 Churchill Downs Cir.
Orlando, FL 32825
407 380-5124

RMG Enterprises
Rod Gowen (CCATS)
14784 S. Quail Grove Cir.
Oregon City, OR 97045
503 655-7484 FAX 503 655-4116

TS-2068
Rod Humphreys (VSUG)
10984 Collins Pl.
Delta, BC V4C 7E6 Canada
604 583-2819

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708 232-6147

BBS — GATOR
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EFF's Guide to the Internet, v. 3.1, part 3

1.8 HOW IT WORKS

The worldwide Net is actually a complex web of smaller regional networks. To understand it, picture a modern road network of trans-continental superhighways connecting large cities. From these large cities come smaller freeways and parkways to link together small towns, whose residents travel on slower, narrow residential ways.

The Net superhighway is the high-speed Internet. Connected to this are computers that use a particular system of transferring data at high speeds. In the U.S., the major Internet "backbones" theoretically can move data at rates of 45 million bits per second (compare this to the average home modem, which has a top speed of roughly 9,600 to 14,400 bits per second). Connected to the backbone computers are smaller networks serving particular geographic regions, which generally move data at speeds around 1.5 million bits per second. Feeding off these in turn are even smaller networks or individual computers.

Unlike with commercial networks such as CompuServe or Prodigy, there is no one central computer or computers running the Internet -- its resources are to be found among thousands of individual computers. This is both its greatest strength and its greatest weakness. The approach means it is virtually impossible for the entire Net to crash at once -- even if one computer shuts down, the rest of the network stays up. The design also reduces the costs for an individual or organization to get onto the network. However, thousands of connected computers can also make it difficult to navigate the Net and find what you want -- especially as different computers may have different commands for plumbing their resources. It is only recently that Net users have begun to develop the sorts of navigational tools and "maps" that will let neophytes get around without getting lost.

Nobody really knows how many computers and networks actually make up this Net. Some estimates say there are now as many as 12,000 networks connecting nearly 4 million computers and more than 20 million people around the world. Whatever the actual numbers, however, it is clear they are only increasing.

The Net is more than just a technological marvel. It is human communication at its most fundamental level. The pace may be a little quicker when the messages race around the world in a few seconds, but it's not much different from a large and interesting party. You'll see things in cyberspace that will make you laugh; you'll see things that will anger you. You'll read silly little snippets and new ideas that WILL make you think. You'll make new friends and meet people you wish would just go away. And you'll do it all in a community that transcends state lines and national borders. Major network providers continue to work on ways to make it easier for users of one network to communicate with those of another. Work is underway on a system for providing a universal "white pages" in which you could look up somebody's electronic-mail address, for example. This connectivity trend will likely speed up in coming years as users begin to demand seamless network access, much as telephone users can now dial almost anywhere in the world without worrying about how many phone companies actually have to connect their calls.

Today, the links grow ever closer between the Internet and such commercial networks as CompuServe and Prodigy, whose users can now exchange electronic mail with their Internet

friends. All of the major commercial networks, such as CompuServe and America Online are gradually bringing internet access to their users (one network, Delphi, already offers complete access).

And as it becomes easier to use, more and more people will join this worldwide community we call the Net.

Being connected to the Net takes more than just reading conferences and logging messages to your computer; it takes asking and answering questions, exchanging opinions -- getting involved.

If you chose to go forward, to use and contribute, you will become a citizen of Cyberspace. If you're reading these words for the first time, this may seem like an amusing but unlikely notion -- that one could "inhabit" a place without physical space. But put a mark beside these words. Join the Net and actively participate for a year. Then re-read this passage. It will no longer seem so strange to be a "citizen of Cyberspace." It will seem like the most natural thing in the world.

And that leads to another fundamental thing to remember:

You can't break the Net!

As you travel the Net, your computer may freeze, your screen may erupt into a mass of gibberish. You may think you've just disabled a million-dollar computer somewhere -- or even your own personal computer. Sooner or later, this feeling happens to everyone -- and likely more than once. But the Net and your computer are hardier than you think, so relax. You can no more break the Net than you can the phone system. If something goes wrong, try again. If nothing at all happens, you can always disconnect. If worse comes to worse, you can turn off your computer. Then take a deep breath. And dial right back in. Leave a note for the person who runs the computer to which you've connected to ask for advice. Try it again. Persistence pays.

Stay and contribute. The Net will be richer for it -- and so will you.

1.9 WHEN THINGS GO WRONG

* Your computer connects with a public-access site and get gibberish on your screen.
If you are using parameters of 8-1-N, try 7-1-E (or vice-versa).
If that doesn't work, try another modem speed.

* You have your computer dial a public-access site, but nothing happens.
Check the phone number you typed in. If correct, turn on your modem's speaker (on Hayes-compatible modems, you can usually do this by typing ATM1 in your communications software's "terminal mode"). If the phone just rings and rings, the public-access site could be down for maintenance or due to a crash or some other problem. If you get a "connect" message, but nothing else, try hitting enter or escape a couple of times.

* You try to log in, but after you type your password, nothing happens, or you get a "timed out" message followed by a disconnect.
Re-dial the number and try it again.

* Always remember, if you have a problem that just doesn't go away, ask! Ask your system administrator, ask a friend, but ask. Somebody will know what to do.

1.10 FYI

The Net grows so fast that even the best guide to its resources would be somewhat outdated the day it was printed. At the end of each chapter, however, you'll find FYI pointers to places on the Net where you can go for more information or to keep updated on new resources and services.

One of those resources is Everybdy's Internet Update. Every month, this free electronic newsletter will update you on new Net services and resources. Look for it in Usenet's alt.internet.services and comp.org.eff.talk conferences (see chapter 3) and on the Electronic Frontier Foundation's archive site (see chapter 7).

InterNIC, the Internet Network Information Center, maintains lists of systems that provide public access to Internet services. They're available on the network itself, which obviously does you little good if you currently have no access, but which can prove invaluable should you move or want to find a new system. To access the lists, use gopher (see Chapter 8) to connect to ds.internic.net. From the main menu, select "InterNIC Information Services" and then "Getting Connected to the Internet."

Benoit Carl Lips maintains a list of Internet access providers in Europe. It's available via the World-Wide Web at http://www.earth.org/~lips/ (see Chapter 9 to decipher this) or via FTP at sumex-aim.stanford.edu in the /info-mac/comm/information directory (see Chapter 7 for details on this).

The Society for Electronic Access in New York maintains a comprehensive list of Internet providers in the New York/Tri-State area. You can get a copy by using Gopher to connect to gopher.panix.com. At the main menu, select SEA.

Zik Saleeba maintains a list of Australian sites. You can get the most current version of the list (which also includes information on sites that provide e-mail and Usenet access) via ftp/ncftp and World-Wide Web. For the former, connect to archie.au (again, look in Chapter 6 to decipher this). Look in the usenet/FAQs/alt.internet.access.wanted directory for Network_Access_in_Australia_FAQ file. For the former, point your Web client at http://www.cs.monash.edu.au/~zik/netfaq.html

Steven Levy's book, "Hackers: Heroes of the Computer Revolution," (Anchor Press/Doubleday, 1984). describes the early culture and ethos that ultimately resulted in the Internet and Usenet.

You'll find numerous documents about the Internet, its history and its resources in the pub/Net_info directory on the Electronic Frontier Foundation's ftp server (see chapter 7 to decipher this).

Chapter 2: E-MAIL

2.1 THE BASICS

Electronic mail, or e-mail, is your personal connection to the world of the Net.
All of the millions of people around the world who use the Net have their own e-mail addresses.

A growing number of "gateways" tie more and more people to the Net every day.
The basic concepts behind e-mail parallel those of regular mail. You send mail to people at their particular addresses. In turn, they write to you at your e-mail address. You can subscribe to the electronic equivalent of magazines and newspapers. Sooner or later, you'll probably even get electronic junk mail.

E-mail has two distinct advantages over regular mail. The most obvious is speed. Instead of several days, your message can reach the other side of the world in hours, minutes or even seconds (depending on where you drop off your mail and the state of the connections between there and your recipient). The other advantage is that once you master the basics, you'll be able to use e-mail to access databases and file libraries. You'll see how to do this later, in chapter 10, along with learning how to transfer program and data files through e-mail.

E-mail also has advantages over the telephone. You send your message when it's convenient for you. Your recipients respond at their convenience. No more telephone tag. And while a phone call across the country or around the world can quickly result in huge phone bills, e-mail lets you exchange vast amounts of mail for only a few pennies -- even if the other person is on the other side of the earth.

E-mail is your connection to help -- your Net lifeline. The Net can sometimes seem a frustrating place! No matter how hard you try, no matter where you look, you just might not be able to find the answer to whatever is causing you problems. But when you know how to use e-mail, help is often just a few keystrokes away: you can ask your system administrator or a friend for help in an e-mail message.

The quickest way to start learning e-mail is to send yourself a message. Most public-access sites actually have several different types of mail systems, all of which let you both send and receive mail. We'll start with the simplest one, known, appropriately enough, as "mail," and then look at a couple of other interfaces. At your host system's command prompt, type:

mail username

where username is the name you gave yourself when you first logged on.
Hit enter. The computer might respond with

subject:

Type *test*

or, actually, anything at all (but you'll have to hit enter before you get to the end of the screen). Hit enter.

The cursor will drop down a line. You can now begin writing the actual message. Type a sentence, again, anything at all. And here's where you hit your first Unix frustration, one that will bug you repeatedly: you have to hit enter before you get to the very end of the line. Just like typewriters, many Unix programs have no word-wrapping (although there are ways to get some Unix text processors, such as emacs, to word-wrap).

When done with your message, hit return. Now hit control-D (hold down the control key, then hit your d key). This is a Unix command that tells the computer you're done writing and that it should close your "envelope" and mail it off (you could also hit enter once and then, on a blank line, type a period at the beginning of the line and hit enter again).

You've just sent your first e-mail message. And because you're sending mail to yourself, rather than to someone somewhere else on the Net, your message has already arrived, as we'll see in a moment.

If you had wanted, you could have even written your message on your own computer and then uploaded it into this electronic "envelope." There are a couple of good reasons to do this with long or involved messages. One is that once you hit enter at the end of a line in "mail" you can't readily fix any mistakes on that line (unless you use some special commands to call up a Unix text processor). Also, if you are paying for access by the hour, uploading a prepared message can save you money. Remember to save the document in ASCII or text format. Uploading a document you've created in a word processor that uses special formatting commands (which these days means many programs) will cause strange effects.

When you get that blank line after the subject line, upload the message using the ASCII protocol. Or you can copy and paste the text, if your software allows that. When done, hit control-D as above.

Now you have mail waiting for you. Normally, when you log on, your public-access site will tell you whether you have new mail waiting. To open your mailbox and see your waiting mail, type

mail

and hit enter.

When the host system sees "mail" without a name after it, it knows you want to look in your mailbox rather than send a message. On a plain-Unix system, your screen will display something like:

Mail version SMI 4.0 Mon Apr 24 18:34:15 PDT 1989 Type ? for help.
"/usr/spool/mail/adamg": 1 message 1 new 1 unread
>N 1 adamg Sat Jan 15 20:04 12/290 test

Ignore the first line; it's just computerese of value only to the people who run your system. You can type a question mark and hit return to bring up a list of help files, but unless you're familiar with Unix, most of what you'll see won't make much sense.

The second line tells you the directory on the host system where your mail messages are put, which again, is not something you'll likely need to know. The second line also tells you how many messages are in your mailbox, how many have come in since the last time you looked and how many messages you haven't read yet.

It's the third line that is of real interest -- it tells you who the message is from, when it arrived, how many lines and characters it takes up, and what the subject is. The "N" means it is a new message -- it arrived after the last time you looked in your mailbox. Hit enter. And there's your message -- only now it's a lot longer than what you wrote!

Message 1:
From adamg Jan 15 20:04:55 1994
Received: by eff.org id AA28949
(5.65c/IDA-1.4.4/pen-ident for adamg); Sat, 15 Jan 1994 20:04:55 -0400
(ident-sender: adamg@eff.org)
Date: Sat, 15 Jan 1994 21:34:55 -0400

From: Adam Gaffin <adamg>
Message-Id: <199204270134.AA28949@eff.org>
To: adamg
Subject: test
Status: R

This is only a test!

Whoa! What is all that stuff? It's your message with a postmark gone mad. Just as the postal service puts its marks on every piece of mail it handles, so do Net postal systems. Only it's called a "header" instead of a postmark. Each system that handles or routes your mail puts its stamp on it. Since many messages go through a number of systems on their way to you, you will often get messages with headers that seem to go on forever. Among other things, a header will tell you exactly when a message was sent and received (even the difference between your local time and Greenwich Mean Time -- as at the end of line 4 above).

If this had been a long message, it would just keep scrolling across and down your screen -- unless the people who run your public-access site have set it up to pause every 24 lines. One way to deal with a message that doesn't stop is to use your telecommunication software's logging or text-buffer function. Start it before you hit the number of the message you want to see. Your computer will ask you what you want to call the file you're about to create. After you name the file and hit enter, type the number of the message you want to see and hit enter. When the message finishes scrolling, turn off the text-buffer function. The message is now saved in your computer. This way, you can read the message while not connected to the Net (which can save you money if you're paying by the hour) and write a reply offline.

But in the meantime, now what? You can respond to the message, delete it or save it. To respond, type a lowercase r and hit enter. You'll get something like this:

To: adamg
Subject: Re: test

Note that this time, you don't have to enter a user name. The computer takes it from the message you're replying to and automatically addresses your message to its sender. The computer also automatically inserts a subject line, by adding "Re:" to the original subject. Fromhere, it's just like writing a new message. But say you change your mind and decide not to reply after all. How do you get out of the message? Hit control-C once. You'll get this:

(Interrupt -- one more to kill letter)

If you hit control-C once more, the message will disappear and you'll get back to your mail's command line.

Now, if you type a lowercase d and then hit enter, you'll delete the original message. Type a lowercase q to exit your mailbox.

If you type a q without first hitting d, your message is transferred to a file called mbox. This file is where all read, but un-deleted, messages go. If you want to leave it in your mailbox for now, type a lowercase x and hit enter. This gets you out of mail without making any changes.
The mbox file works a lot like your mailbox. To access it, type

mail -f mbox

at your host system's command line and hit enter.

You'll get a menu identical to the one in your mailbox from which you can read these old messages, delete them or respond to them. It's probably a good idea to clear out your mailbox and mbox file from time to time, if only to keep them uncluttered.

Are there any drawbacks to e-mail? There are a few. One is that people seem more willing to fly off the handle electronically than in person, or over the phone. Maybe it's because it's so easy to hit r and reply to a message without pausing and reflecting a moment. That's why we have smileys (see section 2.4)! There's no online equivalent yet of a return receipt: chances are your message got to where it's going, but there's no absolute way for you to know for sure unless you get a reply from the other person.

So now you're ready to send e-mail to other people on the Net. Of course, you need somebody's address to send them mail. How do you get it?

Alas, the simplest answer is not what you'd call the most elegant: you call them up on the phone or write them a letter on paper and ask them. Residents of the electronic frontier are only beginning to develop the equivalent of phone books, and the ones that exist today are far from complete (still, later on, in Chapter 6, we'll show you how to use some of these directories).

Eventually, you'll start corresponding with people, which means you'll want to know how to address mail to them. It's vital to know how to do this, because the smallest mistake -- using a comma when you should have used a period, for instance, can bounce the message back to you, undelivered. In this sense, Net addresses are like phone numbers: one wrong digit and you get the wrong person. Fortunately, most net addresses now adhere to a relatively easy-to-understand system.

Earlier, you sent yourself a mail message using just your user-name. This was sort of like making a local phone call -- you didn't have to dial a 1 or an area code. This also works for mail to anybody else who has an account on the same system as you.

Sending mail outside of your system, though, will require the use of the Net equivalent of area codes, called "domains." A basic Net address will look something like this:

tomg@world.std.com

Tomg is somebody's user ID, and he is at (hence the @ sign) a site (or in Internetese, a "domain") known as std.com. Large organizations often have more than one computer linked to the Internet; in this case, the name of the particular machine is world (you will quickly notice that, like boat owners, Internet computer owners always name their machines).

Domains tell you the name of the organization that runs a given e-mail site and what kind of site it is or, if it's not in the U.S., what country it's located in. Large organizations may have more than one computer or gateway tied to the Internet, so you'll often see a two-part domain name; and sometimes even three- or four-part domain names.

In general, American addresses end in an organizational suffix, such as ".edu" (which means the site is at a college or university). Other American suffixes include:

.com for businesses

.org for non-profit organizations
.gov and .mil for government and military agencies
.net for companies or organizations that run large networks.

Sites in the rest of the world tend to use a two-letter code that represents their country. Most make sense, such as .ca for Canadian sites, but there are a couple of seemingly odd ones (at least to Americans). Swiss sites end in .ch, while South African ones end in .za.
A few U.S. sites have followed this international convention (such as nred.reading.ma.us).

You'll notice that the above addresses are all in lower-case. Unlike almost everything else having anything at all to do with Unix, most Net mailing systems don't care about case, so you generally don't have to worry about capitalizing e-mail addresses. Alas, there are a few exceptions -- some public-access sites do allow for capital letters in user names. When in doubt, ask the person you want to write to, or let her send you a message first (recall how a person's e-mail address is usually found on the top of her message). The domain name, the part of the address after the @ sign, never has to be capitalized.

It's all a fairly simple system that works very well, except, again, it's vital to get the address exactly right -- just as you have to dial a phone number exactly right. Send a message to tomg@unm.edu (which is the University of New Mexico) when you meant to send it to tomg@umn.edu (the University of Minnesota), and your letter will either bounce back to you undelivered, or go to the wrong person.

If your message is bounced back to you as undeliverable, you'll get an ominous looking-message from MAILER-DAEMON (actually a rather benign Unix program that exists to handle mail), with an evil-looking header followed by the text of your message. Sometimes, you can tell what went wrong by looking at the first few lines of the bounced message. Besides an incorrect address, it's possible your host system does not have the other site in the "map" it maintains of other host systems. Or you could be trying to send mail to another network, such as Bitnet or CompuServe, that has special addressing requirements.

Sometimes, figuring all this out can prove highly frustrating. But remember the prime Net commandment: Ask. Send a message to your system administrator. Include a copy of the header from the original message. He or she might be able to help decipher the problem.

There is one kind of address that may give your host system particular problems. There are two main ways that Unix systems exchange mail. One is known as UUCP and started out with a different addressing system than the rest of the Net. Most UUCP systems have since switched over to the standard Net addressing system, but a few traditional sites still cling to their original type, which tends to have lots of exclamation points in it, like this:

uunet!somesite!othersite!mybuddy

The problem for many host sites is that exclamation points (also known as "bangs") now mean something special in the more common systems or "shells" used to operate many Unix computers. This means that addressing mail to such a site (or even responding to a message you received from one) could confuse the poor computer to no end and your message never gets sent out. If that happens, try putting backslashes in front of each exclamation point, so that you get an address that looks like this:

uunet\!somesite\!othersite\!mybuddy

Note that this means you may not be able to respond to such a message by typing a lowercase r

-- you may get an error message and you'll have to create a brand-new message.

If you want to get a taste of what's possible on the Net, start a message to this address:

president@whitehouse.gov

Compose some well wishes (or grumblings, if you're so inclined). Send off the message, and within a few seconds to a few hours (depending on the state of your Net connection), you'll get back a reply that your message has been received. If you don't feel like starting at the top, send a message instead to

vice-president@whitehouse.gov

The "mail" program is actually a very powerful one and a Netwide standard, at least on Unix computers. But it can be hard to figure out -- you can type a question mark to get a list of commands, but these may be of limited use unless you're already familiar with Unix. Fortunately, there are a couple of other mail programs that are easier to use.

2.2 ELM -- A BETTER WAY

Elm is a combination mailbox and letter-writing system that uses menus to help you navigate through mail. Most Unix-based host systems now have it online. To use it, type

elm

and hit enter. You'll get a menu of your waiting mail, along with a list of commands you can execute, that will look something like this:

Mailbox is '/usr/spool/mail/adamg' with 38 messages [ELM 2.3 PL11]

1 Sep 1 Christopher Davis (13) here's another message.
2 Sep 1 Christopher Davis (91) This is a message from Eudora
3 Aug 31 Rita Marie Rouvali (161) First Internet Hunt !!! (fwd)
4 Aug 31 Peter Scott/Manage (69) New File <UK077> University of Londo
5 Aug 30 Peter Scott/Manage (64) New File <DIR020> X.500 service at A
6 Aug 30 Peter Scott/Manage (39) New File <NET016> DATAPAC Informatio
7 Aug 28 Peter Scott/Manage (67) Proposed Usenet group for HYTELNET n
8 Aug 28 Peter Scott/Manage (56) New File <DIR019> JANET Public Acces
9 Aug 26 Helen Trillian Ros (15) Tuesday
10 Aug 26 Peter Scott/Manage (151) Update <CWK004> Oxford University OU
You can use any of the following commands by pressing the first character;
d)elete or u)ndelete mail, m)ail a message, r)eply or f)orward mail, q)uit
To read a message, press <return>. j = move down, k = move up, ? = help

Each line shows the date you received the message, who sent it, how many lines long the message is, and the message's subject.

If you are using VT100 or similar emulation, you can move up and down the menu with your up and down arrow keys. Otherwise, type the line number of the message you want to read or delete and hit enter.

When you read a message, it pauses every 24 lines, instead of scrolling until it's done. Hit the space bar to read the next page. You can type a lowercase r to reply or a lower-case q or i to get back to the menu (the I stands for "index").

At the main menu, hitting a lowercase m followed by enter will let you start a message. To delete a message, type a lower-case d. You can do this while reading the message. Or, if you are in the menu, move the cursor to the message's line and then hit d.

When you're done with elm, type a lower-case q. The program will ask if you really want to delete the messages you marked. Then, it will ask you if you want to move any messages you've read but haven't marked for deletion to a "received" file. For now, hit your n key. Elm has a potentially major disadvantage for the beginner. The default text editor it often generally calls up when you hit your r or m key is often a program called emacs. Unixoids swear by emacs, but everybody else almost always finds it impossible. Unfortunately, you can't always get away from it (or vi, another text editor often found on Unix systems), so later on we'll talk about some basic commands that will keep you from going totally nuts. If you're lucky, though, your system administrator will have changed emacs to Pico, a much easier to use text processor (more on that in the Pine section below).

If you want to save a message to your own computer, hit s, either within the message or with your cursor on the message entry in the elm menu. A filename will pop up. If you do not like it, type a new name (you won't have to backspace). Hit enter, and the message will be saved with that file name in your "home directory" on your host system. After you exit elm, you can now download it (ask your system administrator for specifics on how to download -- and upload -- such files).

2.3 PINE -- AN EVEN BETTER WAY

Pine is based on elm but includes a number of improvements that make it an ideal mail system for beginners. Like elm, pine starts you with a menu. It also has an "address book" feature that is handy for people with long or complex e-mail addresses. Hitting A at the main menu puts you in the address book, where you can type in the person's first name (or nickname) followed by her address. Then, when you want to send that person a message, you only have to type in her first name or nickname, and Pine automatically inserts her actual address. The address book also lets you set up a mailing list. This feature allows you to send the same message to a number of people at once.

What really sets Pine apart is its built-in text editor, which looks and feels a lot more like word-processing programs available for MS-DOS and Macintosh users. Not only does it have word wrap (a revolutionary concept if ever there was one), it also has a spell-checker and a search command. Best of all, all of the commands you need are listed in a two-line mini-menu at the bottom of each screen. The commands look like this:

^W Where is

The little caret is a synonym for the key marked "control" on your keyboard. To find where a particular word is in your document, hit control-w (depress your control key, then hit w) you'd hit your control key and your W key at the same time, which would bring up a prompt asking you for the word to look for. Some of Pine's commands are a tad peculiar (control-V for "page down" for example), which comes from being based on a variant of the emacs text processor (which is utterly peculiar). But again, all of the commands you need are listed on that two-line mini-menu, so it shouldn't take you more than a couple of seconds to find the right one. To use Pine, type *pine* at the command line and hit enter.

WANTED / FOR SALE, etc...
free ads for UPDATE Subscribers

1) FOR SALE: Two TS tape recorders , made for the TS2068 and TS1000, etc. The same color and style as the TS2068. Works fine, but I have not used tape on a regular basis for years and it needs a good home that will put it to use. The price is $10, plus $3 for shipping and handling ($5 if outside of the USA). This is the price for one, both can be had together for $19, and $4 for shipping. Send check or cash or money order to: Eliad Wannum, c/o UPDATE Magazine, P.O. Box 17, Mexico, IN 46958 USA. I also have for sale a Rotronics Wafadrive that has two 128K tape drives for programs, a serial port and parallel port for use on a Spectrum or TS2068 with Spectrum emulator and twister board, with lots of programs wafer cartridges, for only $45.

2) HELP NEEDED: I have a copy of QMOSAIC (for the QL computer), a non-graphical Internet Web Browser. The DOCs are in Italian. I need someone who can read Italian and is willing to do some translation to English. I will then make this available to English speaking QL users. Contact: Frank Davis, c/o UPDATE Magazine, P.O. Box 17, Mexico, IN 46958, or call during early evenings, Tuesday thru Saturday to 317-473-8031. Also looking for any other Internet or comm programs for use with the Internet or BBSs for QL, Z88 and the TS2068.

3) REAL LIVE FIRE SALE: Large house fire while in the middle of remodeling, but many TS, QL, IBM computers, parts, hardware and software were in storage at the time. Write and tell me what you are looking for, be it ZX81, TS2068, QL, etc. I need to move a lot of this stuff at cheap prices, which can be your gain. Or give me an evening call (if you do not get me the first time, then try again, as I can not be expected to return a lot of calls) and let us see if we can work out a deal. Phone me, Paul Holmgren, at 317-291-6002. Write me at: 5231 Wilton Wood Ct., Indianapolis, IN 46254.

4) Looking for 3.5 inch ED disk drives that work with the Gold Card on the QL. Also 3.2 meg floppy disks for them. Contact: John Pegram, 1126 Stradella Road, L.A., CA 90077.

5) I have a TS1500 computer, 2040 printer, some bookkeeping programs from an ICS course that I would like to advertise for sale or trade if possible in your magazine. Contact: John Kinemond, 133 33rd S. E., Canton, OH 44707-1405.

6) FOR SALE: Radio Shack CGP-115 Color Graphic Printer in like new condition for $75.00. QL computer, new, never used. Package includes Trump Card, power supply, manuals, printer cable, 24 microdrive cartridges (10 pre-programmed, 14 blank), for $125.00 Contact: D.G. Smith, R.415 Stone St., Johnstown, PA 15906.

7) FOR SALE: British QL, with UK serial cable, Parallel printer cable, and UK Modaptor, heat modifications done. For $100. Contact: Eliad Wannum, c/o UPDATE Magazine, P.O. Box 17, Mexico, IN 46958.

Super Spectrum - the never-released Loki

"ftp://ftp.nvg.unit.no/pub/sinclair/pics/machines/loki.gif"

It should be noted that all of the below was vapourware - the journalists were writing up what they thought it would look like if Sinclair's plans ever actually came to fruition...

The Loki was never actually released, of course, though Amstrad made use of some of the keyboard designs; the Spectrum +2 was a slightly modified Spectrum 128 in what was effectively a Loki box.

At the time of the Amstrad deal Sinclair was well advanced with development plans for a new Spectrum micro - the SuperSpectrum - and Sinclair User has now uncovered the full details.

Designed to replace the Spectrum 128 at under £200, the SuperSpectrum - codenamed 'Loki' after the Norse 'gamesplayer' god - is an entertainment software computer with graphics and sound the likes of which have never been seen even at five times the price.

Inspiration for the SuperSpectrum undoubtedly comes from Commodore's incredible Amiga machine. The key to the startling power of the SuperSpectrum - as with the Amiga - lies in its special custom chips. The SuperSpectrum has two sophisticated chips handling the video screen (Rasterop device) and sound synthesis, both with direct memory access. This gives the machine the potential to produce incredibly fast 3D graphics manipulations and sound of hi-fi quality.

But where the Amiga costs over £1,500, the SuperSpectrum will scrape in under £200.

The trick is that the SuperSpectrum is still an 8-bit machine. In fact, it even has a Spectrum 48K compatible mode if you want it. The processor it uses is a special up-rated version of the old Spectrum's Z80A. Called the Z80H, the new chip runs twice as fast, at an incredible 7 MHz. At this speed there is time to provide a fast interrupt handler that keeps pace with the video display, still leaving time to run programs faster than the Spectrum 48K.

But the real power of the micro comes from the two custom chips. Because they have direct access to the memory, during time which would otherwise be wasted, large amounts of screen data can be moved about at speeds that the CPU couldn't manage, even if it had nothing else to do.

To match the CPU, fast-access Ram is required, and the SuperSpectrum will be equipped with two 64K banks each made up of two 256K-bit chips. One bank will be connected to both the CPU and custom-built Rasterop video hardware and will normally hold the video information and sound waveform tables. Bank switching is required to enable the 16-bit address bus access to all the Ram. A 4-bit system allows a total address space of 1 Mbyte. At least two banks will be occupied by Roms but the rest can be fitted with Ram expansion.

The display quality relies on using a 53K video Ram table. Even at 7Mhz a Z80 could not manipulate this amount of data quickly enough to give reasonable animation, so the custom-designed graphics Rasterop device is essential. It tranfers 8-bit data in the video area from one address to another, and in the process can carry out logical functions using data from the destination and source addresses and its own masking registers. Animation and selective screen scrolling becomes an automatic process with the CPU only sending a few instructions during each line interrupt.

Another idea taken from the Amiga is line drawing hardware - the SuperSpectrum will be capable of remarkable 3D wire-frame graphics. The screen mode that will produce the best

games has a 256 by 212 pixel resolution and 64 colours. A single byte is used for each pixel, leaving two bits spare for the Rasterop chip to use for bobs (blitter objects) that give sprite-like animation and collision detection for multi-coloured graphic shapes.

The same principle of Ram sharing will allow sound synthesis of a high quality as waveforms are stored in memory. Sound output, produced by an 8-bit digital to analogue converter, can be heard through a TV speaker, stereo headphones or fed Into a hi-fi system. An optional sound sampler will allow you to 'record' any sound that has a pitch and use it as a musical voice. A music keyboard for the SuperSpectrum will be available as an add-on.

While it's easy to be blinded by the SuperSpectrum's startling graphics and sound qualities there are two other features which could be just as important to the machine's success.

Although the SuperSpectrum will support cassettes - and Amstrad may well build a cassette player into the main box - Softcards could become the new medium for program storage. These credit card size Rom cards can hold a program up to 1 Mbyte in size and they are cheap to manufacture.

The other feature which may attract Amstrad to the SuperSpectrum is the built-in CP/M operating system - add a controller and disc drive and the SuperSpectrum fits neatly into the Amstrad range, running the same utilities as the Amstrad CPC and PCW computers.

To give an idea of what might be achievable with the SuperSpectrum take a look at what the Amiga can do. Nearly everyone who has seen an Amiga has had to completely rethink their expectations of other machines. It can perform lightning fast solid 3D tumbling, animation approaching true cartoon quality and produce digitally sampled sound - real voices, real jet engine roar.

The SuperSpectrum won't equal the Amiga for speed but it will come pretty close, and be able to produce very similar effects at a fraction of the cost.

The big question is: Will Amstrad market the SuperSpectrum now they have the rights to it?

They'd be crazy not to. With the Sinclair technology and Amstrad's marketing the SuperSpectrum - Loki 'the gamesplayer' - would take the world by storm.

One feature that will mark out the SuperSpectrum as different from every Sinclair micro before, will be a keyboard suitable for the fastest of typists. With word-processing such a major attraction to people who would not consider buying a computer for games, a good keyboard is essential. Another change will be the lack of keyword legends associated with 48K Spectrum Basic. The Basic is a development of the QL's SuperBasic and an additional method of entering information will be via a light pen, supplied as standard.

In standard form there will be 128K of Ram. With half of it taken up by video and sound bitmaps this may not seem too generous, but bank switching is provided to allow expansion.

It is intended that most software will be stored in Rom - up to 1Mbyte on special Softcards - leaving plenty of free Ram for workspace. SuperBasic, text, animation graphics, sound and music editors as well as CP/M will be built-in, and the SuperSpectrum Softcard Rom slot will also be standard, giving instant program loading for users and piracy protection for software houses.

Sinclair computers before and after the QL have used the Zilog Z80A CPU, triggered by clock pulses to run at 3.5 MHz. The Z80H allows the SuperSpectrum to run at 7MHz so that all processing functions run in half the time, whether they are number crunching, data handling or screen printing.

The additional speed not only means faster programs - a powerful interrupt facility will keep pace with the screen display without slowing down the CPU to any appreciable extent. Games programmers will delight in being able to change screen mode on every line of the

display.

Rather than rely on a standard sound chip, the SuperSpectrum will have custom-built synthesiser hardware, so it won't sound like any other computer, Amiga excepted. What it will sound like is a Fairlight synth - in other words, virtually anything you want. Waveforms are held in Ram and read out at various speeds with filtering and envelope control. There will also be a Midi interface, stereo inputs and outputs (Walkman style) and built-in music composing.

The list of connections to the new machine is very impressive. A fully buffered Z80 expansion bus, RGB, composite and TV video, floppy disc, serial printer, twin joystick, light pen, network and cassette ports should keep most people happy. Specialists will welcome the Midi In, Out and Thru and stereo sound input, output and Walkman-style headphone jacks. Also the genlock input which will lock the SuperSpectrum's video hardware to video recorders, Laservision optical disc players and a frame grabber. The light pen is fitted as standard.

Peripherals options include floppy disc drive, music keyboard and Ram expansions. Hard disc, compact disc optical Rom drive, mouse, modem and audio and video grabbers are also supported.

The machine will be Spectrum 48K compatible. Inside the SuperSpectrum will be faithful copies of the old Roms. The video hardware can switch to the old format and the CPU clock will slow down to 3.5Mhz. With the same cassette interface available, it seems likely then that a high proportion of Spectrum software will run in a special compatible mode which can be selected. You will not be able to write Spectrum Basic programs as the old Basic Rom will be hidden from the user (do you want to write half-speed programs?) though programs which use it will be able to access it when loaded. What may concern some people will be the lack of a Microdrive interface. Microdrives it would seem are well out of favour. Also there are no plans to include the sound chip from the 128, so true 128 compatibility seems unlikely.

If you think that some remarkable effects have been achieved on the Spectrum screen, you've seen nothing yet - the SuperSpectrum can rival the state-of-the-art graphics handling of the Amiga. With nearly six times more memory devoted to video Ram, the display has the same horizontal resolution as a QL (512 pixels) - but 16 colours are available! Cut the number of pixels per line to 256 and you have two options: 256 colours, or 64 colours and four sprite planes. To handle this vast potential, custom graphics, blitter technology in the form of custom graphics handling, sprite and collision detection hardware, the Rasterop chip (similar to the Amiga's blitter chip) will be built in. This can access the screen Ram directly, so graphic operations can be performed very quickly. Rasterop will also contain a light-pen interface.

	Spectrum 48K	Loki
	==========	====
Price:	£125 (1986)	£200?
Memory:	48K (max)	128K (expands to 1Mb)
CPU:	3.5Mhz Z80A	7Mhz Z80H
Display:	176x256 (only mode)	Up to 512x256
Colours:	15 (in effect)	Up to 256
Sound:	Piezo-electric buzzer	Waveform synthesizer

Dedicated hardware:	---	"Rasterop" blitter chip Amiga-style sound chip
Storage:	Tape, optional microdrive	Built-in tape, optional floppy/hard disk
Output:	TV only	RGB, composite & TV
Sockets:	Tape, Z80 expansion bus	Built-in interfaces for disk, printer, joystick, light pen, serial network, tape, sound, light pen, MIDI, extra RAM, ROM cartridge slot, Z80 expansion bus

Sinclair User, June 1986

Assist. EDITORS NOTES:

It gives one pause to wonder just where computing would be both in Europe and here in North America if this machine had ever been produced. Those who are familiar with the history of Sinclair computers will recall that between the ZX81 (TS1000), TS2068, and the Spectrums, we had perhaps 3-4 million computers sold (figures as given in Sinclair slick mags of the past) which would amount to a large customer base. If many of these people had seen an upgrade such as the LOKI, perhaps the IBM compatible world and Microsoft would not have such a large strangle hold on the market. Some would have still went away, but many would have stayed. If I had a machine such as the one given above it would most probably still see a lot of use. Perhaps it is too late to ever do anything about it...but it is still nice to dream once in awhile. Dreams are what keep our sanity and interest in life going onward. Does anyone have any more thoughts on this machine or information they would like to share with the rest of us?

Eliad P. Wannum

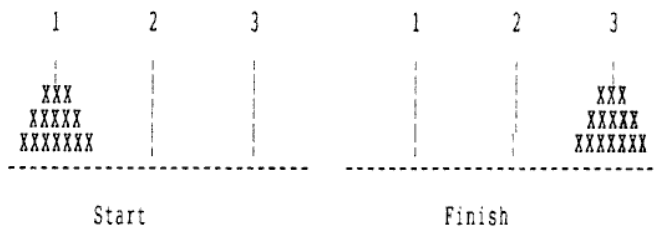
CABLE COLUMN

By Bill Cable

ARCHIVE SERIES
PART 23 : SOLVING THE TOWERS OF HANOI PUZZLE WITH ARCHIVE

Although ARCHIVE is not a language designed for general programming purposes it does work quite well for most anything you wish. As I was working through some problems while teaching myself the C language I came across the Towers of Hanoi puzzle. It is not difficult and it is a very nice example of how recursion can really simplify certain programming problems. If you remember, recursion is where a function (procedure) calls itself until some criteria is met and all the calls can gradually work their way back out to a solution. After writing a C program to solve the puzzle, I thought that it would be fun to write a little ARCHIVE program to solve it also. The only "trick" needed for the ARCHIVE solution was to use a database to hold values that would normally be held in a variable array in most languages. You might think this to be crude but if you set up the database in RAM it works very fast and has the advantage to being able to exist outside of the programs normal data area. There are some cases where this could be a very powerful tool. Maybe next time we can explore it more.

The Towers of Hanoi puzzle goes like this. You have three pegs and a set of disks with holes in them so they will fit on the pegs. The disks go in size from a smallest one to a largest one with no two alike. We will call the smallest disk number 1 and the next number 2 and so one. Peg 1 is on your left and peg 2 is in the middle and peg 3 is on your right. You start with all the disks on the left peg with the largest on the bottom, the next largest right above it and so on. The rules are that you must move the disks from the left peg (#1) to the right peg (#3) and you may not put a larger disk on a smaller disk. So if you have 3 disks you must put disk 1 on peg 3 and disk 2 on peg 2 and disk 1 on peg 2 and disk 3 on peg 3 and disk 1 on peg 1 and disk 2 on peg 3 and disk 1 on peg 3. It takes 7 moves. You will find that it takes 2^n - 1 moves if there are n disks. The start and finish is shown in the illustration below.



To make sure you understand it try working through it for the case of 4 pegs. You will notice that you have to make the right choice for the intermediate pegs to end up with the disks on the right peg at the end. It takes 2^4 - 1 or 15 moves to solve it for 4 disks.

Now try thinking about how this problem can be solved for the general case of n disks using a recursive method. Use any language you are familiar with. Think about it a while and try to work out a rough solution and then read on.

Recursion and the Towers of Hanoi

The recursive solution works like this. If there is just one disk the solution is trivial. Just move the one disk from the peg it is on to the peg it is to go to. But suppose we have n disks we want to move from peg 1 to peg 3. First we will call a routine which will move n-1 disks from peg 1 to peg 2 and then move disk n from peg 1 to peg 3 and then the n-1 disks from peg 2 to peg 3. Sounds easy but how does this magical routine that can move n-1 disks from peg 1 to peg 2 work. It just calls itself with (n-1)-1 to move from peg 1 to peg 3. This recursion goes on until the n-1 is actually 1. Moving the 1 disk is easy. Then the last called procedure can return to the previous calling one and so forth until all the necessary moves are done and we are back at the main procedure.

In the listing given below I have included a display procedure so you can see the disks moving around. The display takes a lot of processing time so it really slows the program down. You often seen the Towers of Hanoi used in benchmark runs to compare processors or languages. This program is not optimized in any way for speed. A limit of 15 disks is given because the display has about reached its limits but there is no other reason why a larger number of disks could not be used. Disable the display portion to explore larger number of disks or to do speed comparisons. Most languages support arrays and you would use a 2 dimensional array to keep track of the pegs and disks. Instead I defined a database in RAM1_ with 3 fields (peg1, peg2, peg3) and then add as many records to it as there are to be disks. Then I can keep track of the pegs and disks by looking at the fields and records of the database. It works quit well and it would be easy to halt the program and save the database and start it up again from the stopping point.

Enter the program by starting the ARCHIVE editor and then entering each procedure. Notice the ERROR command used when attempting to delete the RAM1_ database just in case it doesn't exist. Save the program to disk and to run it make sure it is loaded in ARCHIVE and just type "tower<ENTER>" at the ARCHIVE prompt. The listing begins on the next page. The first procedure (a_tower) only exists to be a heading and does nothing.

This series only has 2 more installments. If you have any special requests about ARCHIVE programming be sure to let me know in time to cover it here. Until next time HAPPY ARCHIVING!

LISTING OF TOWER_PRG

```
proc a_tower
 rem
 rem    tower_prg is an ARCHIVE program that displays and solves the Tower of Hanoi puzzle for
 rem    the specified number of disks. Originally appearing in UPDATE magazine but released to
 rem    the public domain.                                                    B Cable  1/96
 rem
 endproc

proc close_pegs
 rem
 rem    close_pegs will close peg file logical name "p" if it is open
 rem    If it is not open an error will occur which should be trapped by
 rem    the calling proceudre
 rem
 close "p"
 endproc

 proc create_pegs;ndisks-
 rem
 rem    create_pegs closes and deletes pegs_dbf if it exists then creates a
 rem    a new set of pegs with one record for each disk to be used. The peg_dbf
 rem    database is expected to be on device td$(target device) which should be
 rem    set to ram1_ in the tower procedure. The passed argument ndisks is the
 rem    number of disks to have on the first peg.
 rem
 error close_pegs
 kill td$+"peg_dbf"
 create td$+"peg_dbf" logical "p"
  peg1
  peg2
  peg3
  endcreate
 let i=0: while i<ndisks
  let peg1=ndisks-i: append : let i=i+1: endwhile
 endproc

proc disk_show;peg,disk,level
 rem
 rem    disk_show will display the specified disk on the specified peg.
 rem    Each disk is associated with a letter 1 - A, 2 - B, etc which is
 rem    is used in the display. A larger disk number means a larger disk.
 rem    The level tells the procedure where it should go on the peg. Each peg
 rem    has a different position on the screen (1 = 15, 2 = 40, 3 = 65)
 rem    The chr(64+disk) changes the disk number into a display letter.
 rem
 if peg=1: let peg=15
  else : if peg=2: let peg=40
   else : let peg=65: endif : endif
 print at 20-level,peg-disk;chr(64+disk);rept(chr(64+disk),2*disk);
 endproc

proc disk_unshow;peg,disk,level
 rem
 rem    disk_unshow will remove a disk from a peg. Before a disk is put
 rem    on a new peg it must be removed from its old place on the screen.
```

```
 rem
 if peg=1: let peg=15
  else : if peg=2: let peg=40
   else : let peg=65: endif : endif
 print at 20-level,peg-disk;" ";rept(" ",2*disk);
 print at 20-level,peg;"|";
 endproc

proc move;disk,p1,p2
 rem
 rem   move is the recursive procedure which will move a set of disks
 rem   on peg p1 to peg p2. First the unused peg has to be figured out so
 rem   the disk-1 set of disks can be put on it. This procedure is recursive
 rem   unless disk=1 in which case the move can actually occur and the calls can
 rem   begin working their way back. The variable p3 must be local or the
 rem   next recursion will reset the value.
 rem
 local p3
 if p1<>1 and p2<>1
  let p3=1
  else : if p1<>2 and p2<>2
   let p3=2
   else : let p3=3
   endif : endif
 if disk=1
  take;p1,1
  put;p2,1
  else
  move;disk-1,p1,p3
  take;p1,disk
  put;p2,disk
  move;disk-1,p3,p2
  endif
 endproc

proc put;peg,disk
 rem
 rem   put will put the specified disk on next free level of the specified
 rem   If there is no room on the peg the program stops. This will not occur
 rem   the program was typed in with an error. The disk is show on the screen
 rem   by the call to disk_show.
 rem
 first : while fieldv(peg-1) and not eof(): next : endwhile
 if eof()
  print "No room on peg ";peg;" for disk ";disk
  stop
  endif
 if peg=1: let peg1=disk
  else : if peg=2: let peg2=disk
   else : let peg3=disk: endif : endif
 update
 disk_show;peg,disk,recnum()+1
 let moves=moves+1
 endproc
```

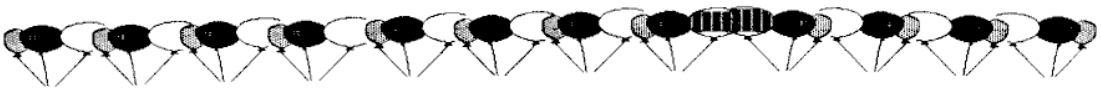
```
proc show_pegs
 rem
 rem   show_pegs sets up the initial screen to show all the disks on
 rem   peg 1.
 rem
 print at 20,1;rept("-",78)
 let i=1: first : while not eof()
  disk_show;1,peg1,i
  print tab 40;"|"; tab 65;"|"
  let i=i+1: next : endwhile
 print at 20-i,15;"|"; tab 40;"|"; tab 65;"|"
 endproc

proc take;peg,disk
 rem
 rem   take will remove the specified disk from the specified peg. If it is
 rem   not found then the program will stop. This will not occur unless there
 rem   was an error when the program was typed in. The disk is remove from
 rem   the screen by the call to disk_unshow.
 rem
 first : while fieldv(peg-1)<>disk and not eof(): next : endwhile
 if eof()
  print "Error disk ";disk;" not found on peg ";peg
  stop
  endif
 if peg=1
  let peg1=0
  else : if peg=2
   let peg2=0
   else : let peg3=0: endif : endif
 update
 disk_unshow;peg,disk,recnum()+1
 endproc

proc tower
 rem
 rem   tower is the main procedure of the tower program. It sets the initial
 rem   conditions and prompts for how many disks to use. It displays the
 rem   pegs at the start and then starts the recursive calls to move.
 rem
 let td$="ram1_": let moves=0
 mode 0
 print " TOWER OF HANOI                                B Cable  1/96"
 print
 input " Start with how many disk [2-15] or 0 to stop? ";nd
 let nd=int(nd)
 if nd=0: mode 1: stop : endif
 if nd<2 or nd>15:tower: endif
 create_pegs;nd
 show_pegs
 move;nd-1,1,2
 take;1,nd
 put;3,nd
 move;nd-1,2,3
 close_pegs
 print at 22,1;"Done after ";moves;" moves"; at 24,1;
 endproc
```

QBOX-USA
810-254-9878

300-14400 bps 8N1 24 hours



Celebrating 2 years of BBS operation helping North American Sinclair enthusiasts keep in touch with other users around the world.

QHJ Freeware

What: QHJ Freeware is a freeware/sharware distribution service for North American QL Users. It is not designed to compete with European Freeware Distributors.

Why: It has recently dawned on me that there are no freeware distributers in North America. Due to currency exchanges, buying freeware from Europe can be a daunting and costly affair.

How: All Freeware packages are available as ZIP files. Check the list of files available, add up the total bytes, determine how many disks it would take, send the disks plus return postage. Return postage should be the same to send the disks to me.

To get the list of files available, send an SASE, an e-mail, or check my web pages. Addresses for all this are:

Timothy Swenson, 5615 Botkins Rd.
Huber Heights, OH 45424-4225
swensont@mail.serve.com
http://www.serve.com/swensont/

QL NEWS FROM AROUND THE WORLD

from F. Davis

This message is to announce that a QL emulator for MacOS is available.

A demonstrative version (Q-emuLator LITE, limited in speed and features) can be found on Internet at InfoMac (sumex-aim.stanford.edu/info-mac or any mirrors, temporarily in the /rec directory) or at maya.dei.unipd.it/pub/sinclair_QL (at the moment in the /incoming directory).

Q-emuLator LITE requires at least MacOS system 6.0.7 and 2M RAM. Some very old Mac models are not supported; anyway they couldn't read QL floppy disks.

To run Q-emuLator you must have access to a QL to get the rom from it, as the rom seems to be still copyrighted by Amstrad and probably I can't include it in the package. The QL should have a 3.5" disk drive to copy the rom to floppy; then Q-emuLator reads from the floppy and copies the rom to the Mac.

The version (0.9.1) available at the Internet sites is not compatible with the MGUK rom. MGUK rom owners should get the patched version (0.9.2) from an Italian BBS: QITALY BBS ++39-342-590451

The full version of Q-emuLator is a commercial product (for ordering information see the documents in the Lite package, or ask to me by e-mail), running at the same speed as an original QL on a 33MHz 68040 Mac, and proportionally slower on other Macintosh models.
Features of the emulated QL: - up to 4M RAM - accepts (virtual) back 16K roms - compatible with over a dozen rom versions (Sinclair's and Minervas), but not with SMSQ - reads/writes both Macintosh files and QL floppy disks (also formats them) - emulation of video, keyboard, sound, serial ports

The commercial version requires MacOS system 7.0 or later, color monitor and 4M RAM.

Daniele Terdina *e-mail: sistest@ictp.trieste.it*

Feedback is always welcome!

From Robin Barker **Jan 13, 96 01:25:04 pm EST**
Subject: Di-Ren Helpline & Subject: Di-Ren's New Email Address
Did you know it is possible to download Internet WWW Pages via Email?

Send an email to: webmail@curia.ucc.ie
Subject: not relevant
Body: GET <URL> where <URL> is the Web page address.
Eg.
GET http://www.forthrt.com/~di-ren/ql.html will return our QL HTML document.
For help, send HELP

Please note our new Email address and update your records accordingly.
support@di-ren.demon.co.uk

Compuserve users please note that this is an INTERNET and not CompuServe address.
Robin Barker
Di-Ren

ACCELERATING ABACUS

by Peter Hale

ABACUS has grown old gracefully, perhaps moreso than any of the PSION suite. With a Gold/QXL Card it can run a humongous spreadsheet at acceptable speed. Although it lacks the bells and whistles of the likes of 1-2-3, there is little computation beyond its ability. And it will accurately add two plus two.

It is popular for everything from tracking investments to budgeting and from comparison shopping to creating invoices. At its simplest use, it surpasses Quill for creating multiple columns of text.

The QL literature on using ABACUS has been quite limited, mostly because one either understands its potential and how to achieve a goal, or one does not even know where to begin asking questions.

Long-time users of ABACUS have experienced two of its cranky weaknesses - the tendency of a favorite spreadsheet to crawl with age and a related potential to hangup in mid-calculation, usually after a three hour session of entering data.

Such weaknessess can be avoided, and even corrected.

There are three (3) features of spreadsheet development critical to smooth operation and all relate to the manner in which ABACUS stores its formulae.

Feature 1

The first is that ABACUS creates a list of formulae in the order that they are created. Next time you load a spreadsheet, F3, Print, Formula for an illustration.

In all likelihood the index of formulae printed at the end (all beginning with F) has many gaps in the sequence. The gaps represent formulae that were Rubbedout or Amended.

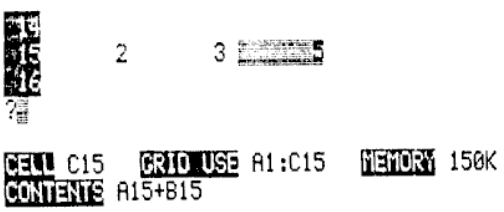
What isn't evident is that during a calculation ABACUS checks all the missing formulae as well as the ones that are operational. Thus the more blanks the slower the spreadsheet. A spreadsheet with forty formulae numbered F1 to F40 runs faster than one with forty formulae with the last number F350. A high formula number is the symptom of inevitable tinkering with a favorite spreadsheet.

Feature 2

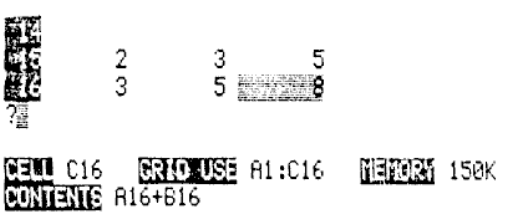
The key to avoiding formula creep is the second feature - the use of Copy and Echo commands whereever possible to insert a formula.

Careful use of Copy and Echo keeps file length compact resulting in faster saves and loads and quicker recalculation. (More on Copy and Echo at the end.)

For example the formula A15+B15 in cell C15 takes 33 bytes, as does every additional sum of two cells individually entered. (Figure 1)



However, if the formula in cell C15 is Copied or Echoed to cell C16 (becoming A16+B16), the file length is only 16 bytes greater. (Figure 2)

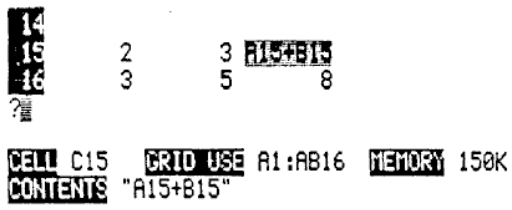


It may be useful to keep a handwritten crib sheet of cells where formulae to be copied are stored. Alternatively, create a table of formulae outside the work area, then copy the relevant formula as needed. Note that there is no memory or formula penalty for inaccurately Copy/Echoing a formula.

A table also verifies the accuracy of the formulae. Amending a formula in one instance alters all copies throughout the spreadsheet.

Feature 3

The third feature of ABACUS answers the question of "When is a formula not a formula?" Answer: When it is a text string as in the contents of cell C15: "A15+B15". **(Figure 3)**



Fortuitously, changing an occurance of a formula into a text string changes only that occurance, not all other copies.

Thus it is an elegant approach to build on an existing formula by wrapping it in quotes, Amending it, then stripping the quotes. The new formula is added to the queue.

BRINGING IT TOGETHER

Care in building a spreadsheet is the best way to achieve smooth operation but few of us are so gifted as to key in every formula correctly the first time (or why pencils have erasers - rubbers in English-speak).

So what to do with a much tinkered spreadsheet that gets cranky and arthritic as the formula numbers head toward four digits?

Ultimately there are two objectives: Minimize the number of unique formulae and reset the formula numbers toward the low end. However, because of the first feature it is impossible to reset the formula numbers in an existing spreadsheet.

One approach to achieving the second objective is to multi-task two copies of ABACUS, then rekey the whole spreadsheet relying on task-switching to check old against new. It is possible but prone to Murphy's Law and the manifestation of some pathologically interesting emotions in the keypuncher.

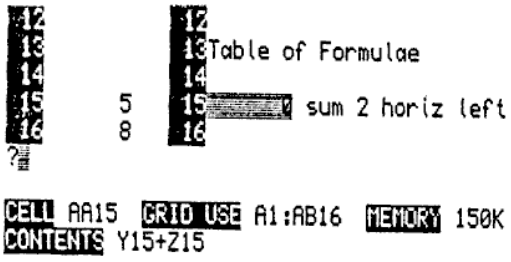
A BETTER CHOICE

Alternatively, the three features can all be brought to bear as follows.

The strategy is to export the spreadsheet as a pure ASCII file, then re-import it to a blank, pre-Zapped spreadsheet. This strategy is necessary since formulae are lost in the export process. Only the results of formula calculations are exported.

First, expand the table of formulae created off the work area to include one occurance of each formula. The Window command (F3, Windows) can be very helpful. Set the windows to move separately, and keep the table of formulae visible for reference. (Switch the cursor between windows with the F4 key).

In the work area change each occurance of a formula to a text string of the cell where it is kept in the table. Thus if the formula A15+B15 in cell C15 is copied to cell AA15 in the table, it will read as Y15+Z15 (the sum of horizontally adjacent cells). **(Figure 4)**



Whenever the formula for the sum of horizontally adjacent cells is found in the spreadsheet, replace it by the text string "AA15". When this part of the exercise is finished, the only formula will be in the table.

At this point ensure that there are no blank columns or rows between the work area and the table of formulae, then wrap those formulae in quotes.

The next step is to insert two rows at the top of the spreadsheet with the F3, Grid, Insert, at 1, Rows 2 command.

In the top row enter as a column heading a field name as a text string. The letter of the column will serve nicely. Since column width data are lost in export, the width of the column may also be included in the column field name. If column A is 12 characters wide, the field name might be "A12".

Next, ensure that each cell in the second row has a text string. For simplicity, enter "X" in cell A2 and Echo it the length of the row. This step ensures that all entries in the column will be exported as text. Any data will be wrapped in quotes during export, so that 123.45 becomes "123.45".

The spreadsheet is now ready to export. But save this version in case there are any errors.

Export this to a file called "file" (Files, Export to archive, <ENTER>, by columns to flp2_file).

Wow, some achievement! Rest now to prepare for the resurrection of the spreadsheet like Phoenix from its ashes.

IMPORTING AND RESTORING THE SPREADSHEET

Start with a fresh, blank spreadsheet. Either Zap the old spreadsheet or for real safety, reset the **QL** and re-execute ABACUS.

Import (F3, Files, import, from flp2_file, by columns to cell A1. If there is a problem with the export file, the import will not be complete. The column heading should be the same as the ones exported and the column lengths should be as before. If there is an error in the export file, a portion of the imported file will not come through from the error downwards.

When import is complete, there will be an all-text spreadsheet exactly as exported but without any formula overhead. However, it will need to be restored and reformulaed to run.

The first step is to reset the columns to their original width prior to export from the field name in the first row. Row two with the dummy text characters ("X") is superfluous. Delete both rows (F3, Grid delete rows from 1 to 2).

The second step is to remove the quotes from formulae in the table of formulae. If the justification or decimal place is not as desired, justify and set the units in the table. This does not change the formula number.

Reset the widths of the columns to what they were in the original spreadsheet, then go to the main body of the spreadsheet and begin Copying the appropriate formula to the cells. If the preparation was as suggested, it is only necessary to Copy from the cell referenced as a text string.

Finally, strip quotes from all numbers that have quotes around them.

At this point be sure that the new file is saved under a new name, then compare the file lengths of the old and the new spreadsheets (WSTAT with Toolkit II). Aren't you pleased with yourself? For more fun, load and time the recalculation speed of both the old and new spreadsheets.

SOME NOTES AND TIPS

Changing the Units and/or Justification in a cell does not effect file length.

Changing Units and/or Justification in one occurrance of a formula does not effect the units and/or justification in another occurrance.

A new occurance of an Echoed formula assumes the justification and units of the spreadsheet default setting. However, if a formula is Copied, the units and justification of the original cell are retained.

QL CORNER by Bob Gilder, from L.I.S.T. Newsletter of New York

Approximately one year ago I had mentioned in the November issue of QL Corner that Taskmaster was giving a problem of asking for a new date and time each and every time the program was loaded. Bob Malloy had confirmed that he too had the very same problem and Bob had found that once the date passed a date in November '95, Taskmaster requested an updated date when first loaded into memory. Any way, I asked our readers if they knew of a 'fix' for this problem.

In the September 95 issue of QUANTA's Magazine, pages 11 and 12 there appeared two separate patches from two QUANTA members to deal with this problem as stated above. Bob Malloy keyed in one patch and I typed in the other patch. EUREKA! ! ! they both upgraded the final date from November 1995 to 2025. I guess that I won't have to worry about this problem any more, as my age will be 90 years old!

One of our LIST members called me and asked if I would solder the power connector onto the QL motherboard, it became loose. Of course I would I stated and he brought his QL to my home for repair. Well - The power connector was not only loose, it had completely sheared off - all three pins were gone. They were still soldered into the motherboard. The best I could do at this time was to lift up the remains of the connector pins and polish them until I felt that they would take soldering. First I soldered tinned wire onto each lead; cleaned out the three holes for the connector pins; attempted to solder in the connector on the motherboard, which was a disaster, the three leads heated up and came apart at the connector. I then cut 3, 6-inch no. 20 stranded wire to the connector pins and soldered the ends of the wire leads into the motherboard. This worked!

To be honest, I really didn't like that fix and felt that there had to be another way to restore the connector to it's original standard. That night I was awakened by an idea (at 3:30 in the A.M.). Why not use right-angle male header pins for the male power connector. I went back to sleep for another three hours, got up and immediately pulled out a box of .1" spaced header pins. The single row headers seemed to have short leads, I examined the double-row headers and determined that the upper row of pins had long solder tails which could be substituted for the original connector pins. I sliced off a three pin section of the header and with a diagonal pliers snipped away the plastic header body until I had three individual right-angle pins.

The original female power connector sockets were positioned at .1" spacing so the header pins were at the right spacing and provided a snug fit into the female connector. The male connector was positioned upwards and locked into a small vise. First I straightened out the remaining lengths of the male connector pins and placed a hot soldering iron at the end of one pin. When the pin became loose, the soldering iron was removed, the socket was removed from the vise and with a small needle nose pliers, the pin was removed. The remaining pins were removed as the first one was. The header pins were inserted into the back of the connector; plugged the male connector into the female connector (from the power supply) to insure perfect alignment. The connector was fitted onto the QL motherboard and the leads were soldered in place. A .01 capacitor was also soldered onto two of the pins on the bottom of the motherboard. This was a perfect repair!

If you have to make such a repair as stated above, perhaps you should place a small drop of silicon cement or super glue to the aft end at the bottom of the power connector to insure that the connector will stay in place. Then solder the three pins at the underside of the QL motherboard.

Several weeks ago, one of my keyboard interfaces became (Keyboard 90) intermittent - the ALT, SHIFT and CTRL keys were affected. This interface was replaced by a Schoen keyboard interface which works well, however, I really do not like the Schoen keyboard. This made me think and reminded me that four to five years ago I made two mechanical keyboards. These keyboards are quite reliable as the individual keys were activated by reed switches providing key strokes by the millions.

The mechanical keyboards were cabled to the two female connectors where the original keyboard membrane tails were installed. The male connectors that were plugged into the motherboard connectors were made from .1 space edge connectors from old surplus electronic boards. First the edge connector had to be cut to size; one 9 pin connector and the other 11 pin connector.

The connectors were made from G10 epoxy layered double sided PC material, which is approximately twice the thickness for the connectors which fit into the QL keyboard connectors. After the edge connectors were cut to the proper pin size I placed one connector into a vice and carefully placed an X-ACTO knife with a sturdy blade at the middle edge of the connector. Carefully pressing the knife blade into the G10 material, the connector material started to split in half until the entire connector became two connectors as they were made of double sided material. A test fit for the connector was made - and it was a snug fit. The second keyboard connector was cut and split. This time the connector did not split apart evenly; however; filing the back of the connector produced a snug fit into the female socket.

Both connectors were removed from the sockets and they were trimmed 3/16 inch from the top edge of the edge connector traces. Small holes were drilled into the edge connectors 1/16" above the traces. The reason for the holes were to provide a strain relief for each of the cable wires. The end of each wire was threaded through the holes and the wires were soldered onto the top end of each trace. The other end of the wires which formed into a cable, was soldered to a 25 pin female 'D' connector.

Next month I will provide a simple row and column table for wiring a mechanical keyboard. This is a fairly simple task for those individuals who can solder efficiently.

I've just received my Di-Ren QL Keyboard interface, however, I cannot use it until I receive a 101 AT compatible only, Black keyboard which I purchased from a local mail order surplus electronics company. These keyboards were manufactured by AST and they are new! The cost is $24.95 and two colors are available: black or off-white. They are available from Prime Electronics Components, INC, 180 West Industry Court, Deer Park, NY 11729, TEL: 516-254-0101. They are mail order only and will not allow any purchases from the street. I have purchased many surplus eproms from them and they were all perfect. The eproms are clean pulls from mother board sockets. The purchaser must clean the eprom window and erase the eproms at a small cost. 27128A eproms $1.45 each, 27256 eproms $1.90 and 27C256 eproms $2.25 and 27512 eproms $2.45 and 27C512 eproms $2.65. Sales tax is 8.25 cents and they accept Visa or Mastercards. Ask for their flier.

I will report about the Di-Ren keyboard interface and the AST keyboard next month. *(Editors note: Di-Ren keyboard interfaces available from FWD Computing (was Mechanical Affinity) and from Di-Ren.)*

See you next month.

Bob Gilter

WHERE ELSE IN THE WORLD?

WHEN YOU WANT TO KNOW WHERE CAN YOU FIND A CERTAIN ITEM OF SOFTWARE OR HARDWARE FOR YOUR QL, WHERE DO YOU GO? WHEN YOU HAVE A BASIC QUESTION ON YOUR Z88 ON HOW TO HOOK IT UP TO ANOTHER TYPE OF COMPUTER? HOW TO MAKE A CABLE FOR IT? WHERE DO YOU GO? WHERE DO YOU FIND PUBLICATIONS THAT WILL

SUPPORT YOUR COMPUTERS? SO MANY QUESTIONS! FIND THE ANSWERS FROM UPDATE MAGAZINE, P.O. BOX 17, MEXICO, IN 46958.

QL SURVIVORS SOURCE BOOK

FOR ONLY $8.00 POSTAGE & HANDLING INCLUDED

Z88 SOURCE BOOK AND IBM OR QL DISK OF PROGRAMS.

FOR ONLY $7.00 POSTAGE & HANDLING INCLUDED

TAX-I-NOW

by Al Feng

It's been years since Peter Hale (EMSOFT) released a new version of TAX-I-QL. For the most part, the information which the Internal Revenue Service requests has not changed from year to year; and consquently, one can theoretically use any of the TAX-I-QL templates for any given year.

However, an obvious drawback is the year-date(s) within the template. It will represent the year for the last viable edition of TAX-I-QL that you were able to buy. Of course, if you are using TAX-I-QL as a worksheet as I do, then you may not be bothered with having the wrong dates; but, if you also keep-or-file your worksheets with xeroxes of your returns, then having the date out of synch with the returns might be undesirable.

Originally, I would go through the entire template and change each instance of the year to the "proper" year; and similarly, I would change the ancillary year references.

Eventually, it dawned on me that I could expedite the annual process by substituting the last two digits of the year with a CELL value. In my case, I used CELLs H1, H2, & H3 for the current filing year, the previous filing year, and the next filing year. The appropriate text value is then included within other text strings.

I then went through the entire spreadsheet and modified the simple form number in CELL N1 from "1990 * 07" to "19"+H1+" * 07"; and, so on. Thus, wherever the "current year" was included in the text, the constant "H1" was inserted; where the "previous" year was included in the text, the constant "H2" was inserted; and, where the next year was included in the text, the constant "H3" was inserted.

For convenience, the taxpayer's "personal" information was moved to lines 2, 3, & 4. For me, this is a cosmetic change; but, it is a change which would make identification of which-or-whose template it was more immediate -- that is, if you are dealing with "what if scenarios" or if you are working on returns other than you own.

In CELLs which formerly had "askt" or "askn" INPUT the CELL the new "askt" or "askn" CELL value is input. Thus, the CONTENTS of CELL F55 (Occupation) is simply 'F3'.

While you may certainly want to make different or other changes to your old TAX-I-QL template, you can use the following as a starting point.

CELL	CONTENTS
A1	"TAX-I-QL/"+H1
B1	EMPTY
C1	"19"+H1+" FORM 1040 INDIVIDUAL TAX ... "
D1	EMPTY
E1	EMPTY
F1	EMPTY
G1	EMPTY
H1	"95"

```
A2          EMPTY
B2          "For:"
C2          askt("Your Name & Initial ")
D2          askt("Spouse Name & Initial ")
E2          EMPTY
F2          askt("Spouses Last Name ")
G1          EMPTY
H2          "94"

A3          "Social Security #:"
B3          EMPTY
C3          askt("Your Soc. Sec. No. ")
D3          EMPTY
E3          "Occupation"
F3          askt("Your Occupation ")
G3          EMPTY
H3          "96"

A4          "Spouse's SocSec #:"
B4          EMPTY
C4          askt("Spouse's Soc. Sec. No. ")
D4          ".  Spouse Occupation"
E4          EMPTY
F4          askt("Spouse's Occupation ")
G4          EMPTY
H4          EMPTY
```

Since I am working with a relatively old version of TAX-I-QL, I always check my calculations with with a calculator; and then, I always compare it with the tax tables just in case I might owe less that way.

HAPPY TRAILS,
AND COMPUTING, TO YOU ...

Dayton Microcomputer Association (DMA) is one of the oldest computer user groups in the nation, and is an Ohio non-profit corporation. DMA ComputerFest® is the Midwest's largest and longest running computer show, run solely by volunteers. Register now for your booth(s) at the 20th annual DMA ComputerFest®, March 16 and 17, at Hara Conference and Exhibition Center, Dayton Ohio. The past few years have seen tremendous growth in both vendors and attendees. So much growth, we now offer *two* ComputerFest's per year. Early registration will secure the space you want. With *two* ComputerFest's, '96 will be the biggest year yet, ... you need to be part of it..... .... Don't be let out of the Greatest Show around ....20 Years Experience and still growing.....Don't delay.... Act now... Space is selling fast....

The New England Sinclair QL Users Group (NESQLUG)
Hosts
The Fourth North American QL Show
Saturday, May 18th
From 9 AM until 5 PM

In Bedford, Massachusetts, just 15 miles NW of Boston. Bedford, and the two bordering towns of Lexington and Concord, contain many historical sites and museums, including the sites of the first battles of the American Revolution, Minuteman National Park, the Louisa May Alcott house, Walden Pond, the Henry Thoreau house, and many more.

The QL Show will be held at the:
Bedford Ramada Inn, 340 Great Road, Bedford, Massachusetts 01730
Tel: In US (800) 228-2828 or (617) 275-6700
Fax: (617) 275-3011

A block of 25 rooms has been reserved for Friday and Saturday the 17th & 18th of May, 1996, for those attending the show, at a reduced price of just $49 per night - 1 or 2 persons, and $10 more for an additional person. This price also includes an all-you-can-eat, American buffet breakfast. Please mention the 'QL Show' in order to get this special price.

Additional nights are $59 per night for 1 or 2 people. Rooms must be reserved not later than April 27th, three weeks prior to the meeting.

If you reserve a room at the Ramada by April 27th, you may pay the $5 entry fee at the show. If you are not planning to stay at the Ramada, please send a check for $5, by April 27th, made out to:

Gary Norton, 43 Richardson St., Billerica, MA 01821 USA.

Late entry fee at the show is $7. Notify Gary also, if you would like a packet with maps and tourist information. E-mail: norton@prevline.health.org, tel: 508 667-2048, or mail as above.

THE AGENDA

Friday, 17 May (Optional)

Meet in the Ramada Lounge at 7PM, and share rides to the Willow Pond Restaurant in Concord, an informal pub that offers meals under $5 and twin lobster dinners for $14.95.

Saturday, 18 May

8:00 AM Doors to meeting room on 3rd floor of Ramada opened to vendors.
9:00 - Noon General meeting - Coffee and tea will be provided.
Noon - 1:00 Meeting room closed for lunch break. (*)
1:00 - 4:30 General meeting.
4:30 - 5:00 Vendors remove equipment from room.
Numerous valuable QL hardware/software doorprizes will given away all day !

(*) Note: Only sandwiches are available for Lunch at the Ramada Inn, but there is a variety of eating places within 500 yards of the meeting location.

Saturday night QL Banquet

Cost is $19.95. IMPORTANT: Contact Gary Norton to reserve your seat not later than April 27th. If you reserve a room at the Ramada, you may defer payment until you arrive. Otherwise please send a check made out to Gary Norton. NOTE: Banquet is limited to first 60 QLers.

6:00 - 6:30 Reception - 2nd floor Banquet Room, cash bar (open all evening)
6:30 - 7:45 QL Banquet

BANQUET MENU

Fruit cup, Garden salad.
Choice of: Broiled Boston Scrod (a tasty white meat fish)
or Baked Chicken with Supreme Sauce.
Roasted Potatoes, Green Beans Almondine,
New England Shortcake with Strawberries,

7:45 - 7:50 Awards Presentation
7:50 - 8:00: A QL Quorum - a panel of knowledgeable volunteers will answer questions from the floor and offer opinions
Evening ends with a folk song sing along, general discussions, and elbow bending until they throw the stragglers out at midnight.

Sunday, 19 May

9:00 AM QLunch at the Boehms, 33 Selfridge Rd., Bedford
Several QLs and QXLs will be set up in separate rooms for demos and discussions. Coffee, tea, and donuts in the morning, cold cut, sandwich buffet for lunch. Leave when you have to.

The following vendors and QL notables have indicated they are planning to come:
Stuart Honeyball .... Miracle Systems
Jochen Merz ..... Jochen Merz Software
Urs Konig ..... COWO Electronica (Switzerland)
Frank & Carol Davis.. Mechanical Affinity and UPDATE Magazine
Bill Cable ..... Wood and Wind Computing
Roy Wood ..... Q BRANCH
Tim Swenson ..... QL Hacker's Journal.
Others that are trying to make arrangements to come include:
Tony Firshman and Lou Reeves, John and Val Taylor - from QUANTA,
Bill Richardson - from W. N. Richardson & Co., and Albin Hessler - from Albin Hessler Software.

Bill Cable; RR3, Box 92, Cornish NH 03745 USA; Email:bcab@prevline.health.org; tel: 603 675-2218; is vendor point-of-contact. Vendor prices for tables is $25.00 per table. The tables are 3 foot by 8 foot in size.

MECHANICAL AFFINITY

513 EAST MAIN STREET
PERU, IN 46970
USA

317-473-8031 Tuesday thru Saturday only, 6 to 9 P.M
FAX 317-472-0783 9 P.M. thru 9 A.M.
Internet E-Mail address: fdavis@holli.com

Cash, checks, money orders, or COD. Payable to F. Davis.
Add 10% for foreign currency exchange.
C.O. D. Fee will be added to C.O.D. orders.
Postage for North America is included in price.
We do not accept credit cards, and there is a $10 charge for Electronic Wire Transfers to our accounts.
Please allow adequate time for check clearance before shipping.

NEW PRODUCTS FOR QL

QPLANE - *The Powered Back Plane for the QL is now in stock. It utilizes a PC Power Supply Unit to help you place your QL motherboard, drive interface, Qubide, etc. inside a PC tower case or full sized desk top case. Add a Super Hermes, Falkenberg Keyboard Interface, or one of our new Di-Ren Keyboard Interfaces plus an IBM style keyboard and it is set to go. Price for Qplane is $52.*

SPECIAL COMBO of QUBIDE and QPLANE - *This includes the Qubide IDE/AT hard drive interface and the Qplane for only $160. Give your QL an update and power as a personal computer!*

DI-REN QL KEYBOARD INTERFACES - *This will allow you to use a 101 or 102 key AT keyboard (good name brand is recommended) with your QL. This is a very small size board and is easily fitted. It translates most keys to QL format and offers keyboard record/playback facilities. The price is $55.*

AMADEUS QL CONTROLLER - *Designed to link the Sinclair QL to the Amadeus system. This device connects to the QL's ROM port thus enabling high speed communications. Comes with a through port allowing other devices using this to continue to function. The price is $70.*

AMADEUS AMA-SOUND - *Record and play back sounds via your computer. This device employs 12 bit sampling and gives the high quality audio of the ADPCM algorithim. Recorded files may be stored, edited and replayed. Includes all hardware and software. Sample data is in 4 bit packages. All data can be transferred between different types of computers. 3 bit sampling may also be employed. The price for this latest innovation is $84.*

Z88 CONNECTIONS TO HAYES MODEM

1. Official Approach from Cambridge

The following set-up is recommended by Cambridge North America (uploaded by Frank Grady on 1/6/89). *(Editors notes: This file is from several years back and contains some information such as phone numbers, etc. that now may not be applicable, but the cable data is still relevant.)*

"Here's the official pinout for Z88 to any modem, courtesy of Cambridge -- new tech bulletin received yesterday via phone.

```
 9-pin        25-pin
male to      male to
 Z88         Modem:    Sysop's Note:  I've now tried this
-------      -------   ============== cable and it is the
 2 (TxD) --------> 2                  best I've found.  I
 3 (RxD) --------> 3                  belatedly add my strong
 7 (Gnd) --------> 7                  endorsement!!!

 5 (Cts) -------->
 8 (Dcd) --------> 20 (all wired to 20)
 9 (+5V) -------->
```

Cambridge offers a 1-foot cable to this spec for $19.95, but if you're handy you can make your own. I'm happy to report that it works just fine.-- Frank Grady, Detroit 1/5/89

2. Connections Recommended by Wordmongers

The following connections are recommended by Clive (Selvage?) at Wordmongers (telecon of 1/4/89 at 0530 pst). They sell comm software for the Z88, and use the Worldport 1200 modem, so they should know what they are talking about!

```
 Z88          Modem
(DB-9)        (DB-25)
 ----         -----
 2 ---------------- 2
 3 ---------------- 3
 4 --I 4,5
 5 --I shorted
 7 ---------------- 7
 8 --I 8,9
 9 --I shorted
```

Clive added that all the modem cables they make have only three wires, per the above diagram. They also added the following re the switches in the Worldport 1200 (note that these are considerably different than the default setting I use with my portable PC and my Model 100):

SW	WM Recomm	Default	Function with WM Recommendation

1	OFF	OFF	Bell 103/212A or CCITT (ON in U.K.)
2	ON	ON	Autoanswer disabled
3	ON	OFF	Receive sense (vs. DTR sense)
4	ON	OFF	DTR ignored (vs. Enabled)

NOW -- even with these settings, and cable they specified, my Worldport would not give result codes. Worse yet, I could not even log on with manual dialing as I could before. Therefore, functionality with my portable modem deteriorated. The Hayes did work, but only after disabling the DTR sense function.

Phil Wheeler
Torrance, CA
1/20/89 (Vers. 1.06)

A FINANCIAL PROGRAM FOR THE SINCLAIR QL

By
Wood and Wind Computing Bill Cable RR3 Box 92 Cornish NH 03745 USA
Phone (603) 675-2218

For the first time you have the capability of keeping complete and accurate financial records for the Home or Small Business with your QL. A friendly Financial Clerk to serve you. The code is written in the ARCHIVE Programming Language and is completely accessible to the user. All functions are selectable from standardized menus. No knowledge of ARCHIVE is required. The program works from a common sense point of view without imposing accounting theory on the user. Although it has many powerful features the user can use only those features desired, ignoring the rest. Recommended minimum system is a Trump Card with 2 DD Drives. It works much faster on Gold Cards and Super Gold Cards. Latest Version is 3.21. **Great for Tax Records. Order it today so you have plenty of time to be ready for the IRS on April 15.**

PRICING

Public Domain Demonstration Version of QLerk (refundable with QLerk order)	$5.00 US/Canada $7.00 Elsewhere
QLerk Program on Disk with Tutorial Doc File	$29.00 US/Canada $31.00 Elsewhere
QLerk Manual (150 pages of details)	$29.00 US/Canada $34.00 Elsewhere
QLerk Program with Tutorial and QLerk Manual	$50.00 US/Canada $57.00 Elsewhere

Traveling with the Z88

I finally bought my Z88 at the QL show in Oak Ridge. I had hoped to use it while traveling. This week I'm in training so the Z88 came along. My setup includes a 512K ram pack, 256K eprom, PC Link II rom, US Robotics 14.4 Worldport fax modem, Miracle QL parallel printer interface and a Targus case for everything. The terminal software I brought along was z88com. The Z88, ram pack, eprom and PC Link II came from Mechanical Affinity. The USR fax modem came from Prime Electronics. It was new, sealed in the box for $79. The Targus case is a little smaller than normal. Thats probably why I found it on sale for $19 at a local computer show. Thats also why its perfect for the Z88.

Times are changing for the better for the computer equipped traveler. It wasn't too long ago that you couldn't even find a hotel room with a wall jack to plug a modem in. Now, even the Holiday Inn has an extra long phone cord with duplex jack for the "Business Traveler". I tried the phone line right away. I had built the modem cable ahead of time. The USR WorldPort is designed for a laptop computer. It is small (3.82 x 2.55 x 1.08 inches). Since it is designed for the laptop, it has a small attached cable built in that plugs into a standard PC 9 pin serial port. The cable I made works well at 9600 baud. The other diagrams I tried did not work well at higher baud rates. By the way, the USR WorldPort would make an excellent QL modem to use with Hermes. It supports the &R2 command needed for the QL and Hermes to handshake properly at 19.2 kbaud.
My cable:

Z88		USR WorldPort 14.4k
1		no connection
2	TxD	3
3	RxD	2
4	RTS	7
5	CTS	8
6		no connection
7	Gnd	5
8	DCD	1
9	DTR	4

With the USR modem family, a good way to test a cable before using it online is to execute the AT&I4 command. This can be done before hooking up to the phone line. The AT&I4 command will tell the USR modem to print out a page of configuration information. If the page is formatted properly, your cable has handshaking wired properly. If you see all kinds of garbage, your cable does not have the handshaking wired properly. This results in lost characters or garbage on screen. Once the display is formatted ok, its time to try calling your favorite BBS. My very biased choice is QBox-USA. The USR will accept dialing strings up to 36 characters. Fortunately, the string to call out from the hotel and use my credit card is just 36 characters. It took a little fiddling around to fit it into 36 characters but it does work. I used the USR command to save the dialing string into the modems memory. You can save four different strings. This is the procedure. I've substituted x's for my credit card numbers. My local access number is the standard MCI access number 950-1022.

Enter the command at&d0=9w9501022w08102549878/xxxxxxxxxxxxxx
This command saves this entire string into the modems d0 memory. Now whenever you want to dial that number, enter atdtds0.

This command dials the following:

9	for an outside line
w	pause until the next dial tone
9501022	local MCI access number
w	pause for the next dial tone
08102549878	QBox-USA or whatever number you want to reach
/	pause for 125 msecs. w didn't work because there was no dial tone
xxxxxxxxxxxxxx	your credit card number

This totaled exactly 36 characters. Now whenever you want to dial the number, you just enter atdtds0. This command instructs the modem to use tone dialing to dial the number stored in memory location 0.
I found that z88com uses pulse dialing. The hotel phone system did not like that. Using the stored number in the USR avoids that. Another fix would be to edit line 530 in the .cli file and resave as basic.
So, after all that, the Z88 dialed out just fine and I got a nice clean connection at 9600 baud. One thing to change in the QBox config is to change your window size to 10. The ideal size would be 8 to match the Z88, but 10 is the minimum size QBox will accept. This is option (T) for Terminal Lines in the configuration menu. The best solution I found to the window size is to use the spool feature. By using the []+S command, all data will be sent to a temporary file called :ram.-/S.sgn. This feature works perfectly. To turn it off use []-S. This has the added benefit of saving online time. You can set QBox to continuously send all messages. By saving them in the temp file, you can then read them off-line. This cuts down your modem connect time charges and lets you scroll through the messages at your leisure. I didn't realize it worked at first becuase the file doesn't show up in the filer. Thats because I was looking at :ram.1. The temp file is on device :ram.-. I load the temp file into Pipedream then save it as a regular file. You don't want to leave temp files on the Z88 as they can cause problems on rom versions under 4.0. I tried a file download. Z88com supports XModem. It is simple and works. Total battery use for one week, using the Z88 every day was 2 AA four packs. I still need to build Tim Swenson's external battery pack. On my next trip, I'd like to try some other terminal programs. I need to get my copy of ZCP working. I've found the HP DeskJet 320 jet printer is the perfect companion for the Z88. It is a perfect match for the Z88. Its cheap at $199 refurbished from MicroWarehouse with warranty. The printout is 600x300 dots per inch and it can print in color as well. It works perfectly with the Miracle QL parallel printer adapter. The DeskJet 320 runs on a standard camcorder battery. And, its black.... This makes a complete battery operated system (Z88, modem, printer).

Wish List.... Some Fax software, available portable disk drive, more applications. A terminal package that allows you to scroll the display backwards to see what flashed by. ZModem support file transfer support.

This week spent really using the Z88 shows me why so many Apple Mac owners bought it. The Z88 and I will be traveling more often, now that I know how well it works. This is a fun, well thought out portable computer. Spend some time with it.....

Prime Electronics - (516) 254-0101 US Robotics portable modem.

MicroWarehouse - (800) 367-7080 HP DeskJet 320 Printer

Z88 - Miscellaneous Features

The Expanded and non-Expanded Machine

When a Z88 has 128K or more of RAM in slot 1 it becomes an expanded machine. The differences between the expanded and non-expanded are as follows:

Property	Expanded	Non-Expanded
Size of BASIC	40K	8K
Maximum map width	256 pixels	80 pixels
User characters	64	16 (but see below)
Value of EOF#-1	-1	0

Some users will want to use extra memory, for filing for example, without the burden of a 40K BASIC. If all your BASIC programs fit comfortably within the ordinary 8K it is unhelpful to have to carry the extra 32K around, thus using slot 2 or slot 3 to expand the memory does not expand the machine, but just increases memory size. (Note that using Slot 3 for RAM causes a very heavy power drain on the Z88, due to special hardware for programming EPROMs.) The unexpanded machine can use 64 user characters, but if an 80 pixel map is used the last 48 of these will be overwritten by map information when PipeDream is used. Reducing the map width to 64 pixels, or not using the map at all, allows for free use of all 64 user characters. The file attributes for BASIC's -1 channel all hold interesting information:

Attribute	Information
PTR#-1	high word= no. of free handles in the system low word= ROM version code (= &03 for 2.2 and 3.0 versions)
EXT#-1	free memory this is an approximation and should be interpreted with care. It is similar to the memory free indicators given by PipeDream and the Diary.
EOF#-1	True=Expanded, False=Un-Expanded

This information can be accessed by applictions by using the os_frm, to read file attributes, and specifying a handle of &FFFF in IX. Note that although the sequential pointer (PTR) and extent (EXT) are returned as 4 byte values in DE and BC, the end of file (EOF) result is returned in Fz, with Fz=1 for end of file (ie. TRUE or -1) and Fz=0 otherwise (ie. FALSE or 0).

Extra CLI features

square+S	T-redirect output to :RAM.-/S.sgn
square+K	T-redirect input to :RAM.-/K.sgn
square+P	T-redirect output to :PRT.0

If there is an EPROM, which contains a file called "boot.cli", present in slot 3 at the time of a reset then it will be loaded into :RAM.- and executed as a CLI file.

Note: :RAM.- files are dangerous under the current version of the operating system (2.2/3.0) - see next section for details.

Memory for Files and Applications

Each RAM slot has an allocation of space which is useable by the RAM device associated with that slot. This allocation is always less than total RAM available in that slot. Applications (and the special device :RAM.-) can use the remaining memory and the memory allocated to files. Because of this approach the values given for free memory are sometimes confusing. The free memory indicators return space available to applications, which will generally be rather less than that available to files.

The device :RAM.- can use memory from anywhere in the system, and as such is it very useful for large files. Due to a bug in the current operating system (version 2.2/3.0) if any files are stored in the device when a Soft Reset occurs, the system becomes badly confused, and is it very likely that a crash will follow sometime later. If you need to use :RAM.- files, then it is vital that they are deleted immediately after use. The features decscribed in the previous section all use :RAM.- and if these operations are used then the files generated should be deleted at the first oppurtunity.

The Screen and its Intricacies

The screen is generated from a 2K file containing character codes, window and status information with four more files which contain definitions of those characters. The four character sets are called LORES0, LORES1, HIRES0 and HIRES1 where the LORES character sets consist of 6 by 8 pixel characters (used for printing characters) and the HIRES characters are 8 by 8 (used for the PipeDream map and the OZ window).

Each character position on screen is defined by two bytes in the screen file. The format of these two bytes is like this:

Attribute 1 (even address)

7	6	5	4	3	2	1	0
ch7	ch6	ch5	ch4	ch3	ch2	ch1	ch0

Attribute 2 (odd address)

7	6	5	4	3	2	1	0
sw1	sw2	hrs	rev	fls	gry	und	ch8

The Attribute information makes the following contribution:

5 hrs	4 rev	3 fls	2 gry	1 und	0 7-0 ch8-ch0	Description
0	v	v	v	v	000-1BF	LORES1
0	v	v	v	v	01C-1FF	LORES0

1	1	1	v	v	000-1FF	LORES CURSOR
1	1	0	1		xxx - xxx	Null Character
1	0	v	v		000 - 2FF	HIRES0
1	0	v	v		300 - 3FF	HIRES1

x=don't care. v=valid (ie. the attribute depends on the value of the bit).

The addresses of the screen files are held in the gate array, but a system call is provided for reading and writing to the appropriate registers:

os_sci - alter screen information

```
RST &20
DEFB &06
DEFB &D4
```

In:
BHL - new address to be written into register
A - reason code

SC.LR1(&01) - LORES0 (512 byte granularity ie. ignore bits 0-8 of address)
SC.LR0(&02) - LORES1 (4K byte granularity ie. ignore bits 0-11 of address)
SC.HR0(&03) - HIRES0 (8K byte granularity ie. ignore bits 0-12 of address)
SC.HR1(&04) - HIRES1 (2K byte granularity ie. ignore bits 0-10 of address)
SC.SBR(&05) - SCREEN (2K byte granularity ie. ignore bits 0-10 of address)

Out if call succeeded:
Fc=0
BHL - old value of register

Out if call failed:
Fc=1
A - return code
RC.FAIL given for a invalid reason code

Notes:
The system make the following use of the four character sets:

LORES1	This contains the system character set. ie bold, tiny, normal characters and the additional special printable characters.
LORES0	This is used for the 64 user defined characters.
HIRES0	This set is used for the map area.
HIRES1	This set holds the characters for the OZ window.

Uses of the Screen Registers

Obviously, any routines which look directly at screen information are very hardware specific. Use of the os_sci call means that in the future such routines would not cause code to fail, in the way that writing directly to hardware registers might, but if the system hardware arrangement did change any code which relies on the screen information almost certainly not work properly. Therefore it makes sense that code using the os_sci call checks for error returns and can cope with the concept of the screen information being unavailable.

It is safe to move the address of the LORES0 and possibly HIRES0 as well. The other areas are safe to read (find the address by using os_sci with a dummy address and writing the old values straight away), but could only be moved with extreme care. The

reason for this is that in order to synchronise the display certain pixel patterns must be present on the extreme right (they not actually displayed). If these patterns are not present the screen tends to turn black and start to flicker violently. The screen file is terminated by a the null character (shown in the attribute table above).

PipeDream Format

The PipeDream file format is designed to facilitate manipulation by other programs. No control characters, or characters above 127 in value are used in the file, unless they have been explicitly typed in, apart from Carriage Return characters which are used as separators. The files are sequential, and can be edited by any text editor.

PipeDream uses a special form of construct to add special information about the structure of the file. All constructs begin and end with an ASCII percent sign '%'. Immediately after the first percent sign come one or more alphabetic characters which identify the construct. Between these characters and the final percent sign can come any information which is relevant to the construct.

At the start of the file is a group of constructs that identify what the values of Options Page parameters are for the file. This is followed by the main body of the file.

Each column in the file is preceded by a column construct which gives details about the column followed by all the slots in the column. Every slot that is defined in that column has an entry.

Each entry is separated from the next one with a Carriage Return (CR) character. On each line there can be a collection of constructs giving details about the slot.

For each column in the file there is a column construct, followed by all the entries for that column, until the end of file.

Options Page construct

%OP%parameter value CR

parameter	two characters identifying the parameter
value	the value of the parameter
CR	Carriage Return (&0D)

The various parameter values are:

AM	Auto/manual
BM	Bottom margin
BO	Borders
DE	Title
DP	Decimal places
FM	Footer margin
FO	Footer
HE	Header
HM	Header margin
IW	Insert on wrap
JU	Justify
LM	Left margin
LP	Leading characters
LS	Line spacing
MB	Minus/brackets
PA	Pages

PL	Page length
PS	Page no. start
RC	Rows/columns
TM	Top margin
TN	Text/numbers
TP	Trailing characters
WR	Wrap

Column construct

%CO: column, width, wrap-width%

column	letter identifying the column
width	decimal number giving the column width
wrap-width	decimal number giving the wrap-width

These constructs can appear anywhere in the entry for each slot:

%B%	bracket format
%C%	centre align
%Dn%	decimal places, n gives the number
%DF%	floating format
%F%	free align
%Hn%	highlight character: n gives the number
%JL%	justify left
%JR%	justify right
%L%	left align
%LC%	leading character format
%LCR%	LCR align
%Pn%	page break: n gives the argument, 0 for unconditional
%PC%	per cent character
%R%	right align
%TC%	trailing character format
%V%	slot is a number slot

General format:

construct text construct text ... CR

construct	one of the constructs above
text	ASCII characters being the slot contents
CR	Carriage Return (&0D)

Diary Format

Each day the diary uses (an active day) is headed by a date. This date is in the form:

%dd,mm,yyyy

The % character is represented as %%

The remaineder of a diary file is simply straight text.

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